NEW SERIES. No. 67.] [JULY, 1908.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

I.—MARTINEAU AND THE HUMANISTS.

BY LESLIE J. WALKER.

THERE does not seem at first sight to be a very close connexion between the Idio-psychological Ethics of Martineau and the theory that human values and human purposes permeate and affect even our most remotely cognitive activities. Yet the aim, the method, and the fundamental principles of the great English moralist of the last century are analogous to those of the Humanists; and what the latter are now saying of Truth is very similar to what Dr. Martineau said years ago of Moral Worth. So striking, indeed, is this resemblance that a student of the history of philosophy can hardly fail to connect the new theory of knowledge which Messrs. James and Schiller are at present endeavouring to force upon our notice, with the philosophical standpoint adopted by Martineau as the basis of his ethical teaching.

If there was one thing in which Martineau believed more firmly than in anything else, it was the dignity of human nature, a dignity which from the outset he conceived to be inseparably bound up in the freedom of man's will. He saw clearly, too, that the materialistic and pseudo-scientific theories of his day meant, not only the downfall of religion, but also the ruin of morality. Consequently he made it his life-work to defend the notions of God, Freedom and Moral Responsibility from the attacks of Sceptic and Positivist.

Already, indeed, there stood within the arena of philosophic strife one combatant who had fought strenuously and persistently against the common enemy. But abroad Absolutism was discredited; and in England, though defended with all the ardour of converts by those who had taken up the Kantian

position, it was already showing signs of disintegration—the inevitable mark of error and decay. A philosophy of the Absolute with the scant respect it shows for the personality of man, whom it seems to reduce to a mere function of a universal Consciousness, could never satisfy, nay, must ever evoke a protest from a mind such as that of Martineau scarcely less vigorous than that which was aroused by Scepticism.

In truth, Martineau's philosophy is, like Humanism, a reaction against Absolutism as well as against Materialism and Scepticism; and like Humanism, too, it marks a return to the *human* point of view. As opposed to belief in a universal and intrinsic Ground, both philosophies are individualistic; and, instead of looking at the universe from the standpoint of an Eternal Ego, both prefer to take as their basis the inner life of man. Martineau, indeed, does not go so far as to adopt the Protagorean principle that 'man is the measure of all things'—a principle which Mr. Schiller and his friends have borrowed from a bygone age and taken as their watchword, but he does maintain that the morality of human conduct is determined solely by human needs and human springs of action.

Idio-psychological Ethics, in fact, are so called precisely because they are founded on an introspective study of man's nature as revealed in his own self-consciousness. They are opposed to anything which begins with a study of Nature or of God *ab extrinseco*. And the Humanists, or Pragmatists—for practically the names are synonymous—are only applying the same principle to the Theory of Knowledge when they assert that Truth also is a 'value' which depends for its specific nature upon the purposes and needs that govern and direct our thinking. Man is prone to generalise; and, when once the psychological method had been applied to those "unique and unanalysable qualities" 'right' and 'wrong' which we predicate of our actions, one can hardly be surprised that others should extend its use to the parallel, and, so it is said, equally unique and unanalysable conceptions of the 'true' and the 'false'.

At any rate, Martineau and the Humanists both adopt the psychological method and the psychological point of view. Both are convinced—explain the facts how you may—that in man alone is to be found the clue to the universe in which we live; and though the former never attempted to apply the method to cognition in general, he has at least built up by its means that system of Morality which he propounds in the second volume of his now famous *Types of Ethical Theory*.

Martineau starts with a psychological analysis of our moral

consciousness, and finds that there are within us certain creative impulses or springs of action, which he divides into four kinds, *viz.*, Organic Appetites and the impulse to unselective physical activity in general; Passions,—antipathy, fear, anger; Affections,—parental, social, and compassionate; Sentiments,—wonder, admiration, reverence. These four kinds of impulse are connatural and instinctive; and are styled '*Primary Springs of Action*,' since it is from them that all more complex and interested springs are supposed to be developed, and from both that all action proceeds. They are essentially conative, being, in fact, 'the dynamic sources of action within the mind'. In its origin a spring consists merely in an impulse toward 'an unselected form of activity,' an indeterminate striving in which we are impelled by some inner need toward an end of which we have at most but a dim awareness. But with the satisfaction of its vaguely-felt demands the spring becomes more clearly defined. Pleasure, too, ensues, and is remembered; so that when a spring which has once attained its end, is re-aroused, there arises with it a pre-conception of the experience to which it led, and this experience is added on as an idea to the spring of action, and itself becomes an end. In this way *secondary* springs arise; and what was formerly 'a movement of mere need now becomes a movement of desire'. Thus the Organic Propensions give rise to the love of money, pleasure and power; the Passions to malice, vindictiveness and suspiciousness; the Affections to sentimentality; the Sentiments to the love of self-culture, æstheticism, and interest in religion.

These 'springs of action,' essential to Martineau's system since they lie at the foundation of his theory of Morality, occupy in Humanism a place no less important. These same conative tendencies of our nature, expressive of our human needs and purposes, constitute for the Humanist the forms which we seek to impose upon the plasticity of matter, the ideals which we ever strive to realise in the concrete. At first vague and indefinite, their significance manifests itself more and more clearly with the growth of experience; while their primary aim throughout is *action*, action which shall enable us to live by fashioning our environment to suit our needs.

The emphasis which both Martineau and the Humanists thus lay upon conation, marks a reaction in favour of the volitional side of our nature. In Absolutism volition and the emotions are subordinated to Thought, which, as synonymous with Being, constitutes the Universe. Against this identification of our nature with one of its functions Martin-

eau and the Humanists alike protest, and, as is usually the case in reactionary movements, tend to go to the other extreme and subordinate thought to volition. The intellect, for example, in Idio-psychological Ethics is concerned chiefly with ways and means and is not the Moral Faculty; while in Humanism it is wholly subservient to action, the love of knowledge as such there becoming, like the love of pleasure, a secondary and derived impulse.

As yet, however, we have not touched on the question of Morality proper. Morality, according to Martineau, is based on 'Moral Worth,' a peculiar quality of the springs of action, which are therefore the proper objects of moral judgment. Bentham's 'motive and intention,' the Scholastic 'object, end, and circumstance' are made to depend for their morality in this view upon the different springs which they call into operation, and which range themselves as 'persuasives' or 'dissuasives' in regard to any contemplated line of conduct. "Threats are converted into fears, and bribes into covetousness, while both are confronted by the internal affections, compassion, a sense of justice, and a reverence for right."

Over all these springs conscience presides, sometimes declaring in favour of the persuasives, sometimes in favour of the dissuasives, according to their relative moral worth. Morality, therefore, necessarily implies choice and is impossible without the simultaneous presence of at least two conflicting springs of action, between which we are free to choose. Moral choice, however, must not be confused with Prudential choice, for Prudential or Hedonistic choice is based merely on 'Resultant pleasure,' *i.e.* on the pleasure of successful or realised impulse which can vary in quantity only, not in kind. A choice of this sort is really no choice at all, but at bottom nothing more nor less than 'self-surrender to the strongest impulse'. Moral choice, on the other hand, is a genuine choice. To be moral we must be free to follow the prudential *or* the ethical promptings of our nature, we must be at liberty to obey the strongest *or* the highest motive.

Similarly the Humanist teaches that to acquire knowledge we must be *free* to act in different ways and on different hypotheses or postulates in order to learn by experience which of them will enable us to deal most satisfactorily with our surroundings. Morality and knowledge are alike conditioned by the possibility of voluntary choice; and just as the transition from the non-moral to the moral state occurs where spontaneity gives place to free volition, so the transition from mere sense-experience to cognition occurs when blind striving is superseded by selective action.

Relativity, too, is characteristic both of 'Moral Worth' and of Humanistic Truth. Moral Worth, we are told, can no more belong to one spring alone than "fraternity can belong to a solitary man, or a convex surface present itself without a concave". "It is inherent in a conflicting pair of springs as in a dual object, and not only could not be cognised, but does not even exist till they fall in combination. No spring has any definite moral value of its own, but merely a relative value which belongs to it only when some other spring is aroused to dispute its claim to control the course of action." Hence, the Moral Worth of any one spring depends for its specific nature upon the particular spring with which for the moment it happens to conflict; in itself no spring is either good or bad.

No less emphatic is the Humanist in denying the existence of absolute Truth. Truth, he says, belongs to a proposition or hypothesis only in so far as it serves our human purposes better than some alternative proposition or hypothesis. It is a value which is entirely dependent upon its power to satisfy human needs. Since, then, our needs may change, and are never completely satisfied, there is no theory in science and no axiom in philosophy which may not be so modified at some future date as to render our present conception of it not only inadequate but false.

Now, from the relativity of Moral Worth, Martineau infers that in his system 'a graduated scale of Excellence' must take the place of that co-ordination and classification of the virtues which we find in other systems; and a like consequence would seem to follow in regard to the relativity of truth. This the Humanist admits, but as yet he has made no attempt to carry his theory into practice. The careful analysis and classification of springs of action, so characteristic of Martineau's system, is absent in Humanism. There is no analysis, no comparison, no classification of the purposes and needs which control our cognitive processes; nor are we as yet provided with even a tentative scale of 'Utility' or 'Workability,' which can be applied to theories, laws and axioms. Yet a scale of cognitive values and a table of the relative urgency of different needs would seem to be of vital importance if all truth is relative and if the needs by which it is determined are so numerous and so different. It may be pleaded in reply, perhaps, that Humanism is yet in its infancy, and that there has been no time to examine its working in detail. But the fact of the matter is that while Martineau found it difficult enough to distinguish and classify springs of action with a view to arranging them in a scale of moral excellence, it would be still more difficult, if not im-

possible, for the Humanist to construct a corresponding scale from the point of view of the theory of Knowledge.

If we compare the Humanist definition of Truth with Martineau's definition of Moral Worth, the chief difference between them is apparently this, that whereas the good is that which satisfies the highest spring, the true is that which yields the *greatest sum of satisfactions.* (Truth in this sense is not, of course, the Truth in which Martineau believed—his 'Humanism' was merely a moral Humanism;—but it is Truth for the Humanist.) The 'sum of satisfactions' which is here laid down as the criterion of truth, makes it practically impossible to estimate relative Truth. Martineau found it impossible to classify complex springs of action, and omitted them altogether from his tabulated scale of Excellence; but for the Humanist all springs are complex, and a theory to be true must satisfy all our needs. Moreover, we have, or are supposed to have, an intuitive judgment of the Relative Moral Worth of different springs, but no such judgment can be appealed to in the case of truth-values. Again, for the comparison of the truth-values of propositions, theories and such-like 'claims to truth,' a preliminary scale setting forth the relative importance of different satisfactions, is needed. Not even this, however, has so far been attempted, nor does there seem much chance of it being successfully drawn up, especially while there is so much difference of opinion in regard to the rank of 'intellectual satisfactions'. And even if we suppose the difficulty of settling the rank of various satisfactions to have been surmounted, what Martineau says of a scale of ethical principles is equally true in the sphere of knowledge, namely, that it is only when "the cycle of original experiences has completed itself, when all the internal springs of action have had their mutual play and exhausted their series of permutations," that there will be resources for forming a scale of relative values. Since, then, experience is ever growing, and the permutations and combinations of hypotheses, principles, and laws is ever increasing in number and variety, a scale of truth-values, if such could be constructed at all, would still be tentative only, and always liable to modification. Yet, in spite of all this, a scale of some kind is indispensable for the theory of knowledge, if we accept the pragmatic doctrine that 'truth is made by postulation in accordance with our needs and by verification through experiences which satisfy those needs; because, until it is completed, and the propositions, laws and theories which are to occupy the highest place determined, truth will be nothing more than probability'.

A volitional theory of Knowledge and Morality thus involves the relativity of both truth-values and moral-values to one another together with the negation of all absolute criteria, in place of which a table of such values must needs be substituted. But it involves more than this. From the assertion that truth and morality are determined by our needs, or by the dynamic sources of action within the mind, there follows another kind of relativity, namely, relativity to the self-conscious ego that strives to realise its needs in thought and in action—a relativity which we usually term Subjectivism.

Martineau would doubtless have vigorously repudiated this consequence of his theory. Yet he declares that Morality is a 'Value,' and a value, though unique and irresolvable, must be a value for something. Since, then, Moral Worth belongs strictly to springs of action which correspond to and are expressive of our *needs*, that *something* would seem to be the need which the authoritative and categorical judgment of conscience pronounces to be relatively more urgent or more fundamental. But, if this be so, since our needs are subjective, and since effect and circumstance are carefully excluded by Martineau from the sphere of morality proper, moral right and moral wrong, being determined by subjective conditions, must also be subjective.

In the same way it follows that Truth is subjective, if once we grant that all our cognitive activities are intrinsically modified by our purposes and needs, and that it is impossible to distinguish in the content of thought that which is due to the object from that which is due to the mind. For, in this case, we can make no allowance for the mental or personal element, so that thought will be essentially anthropomorphic in 'content' as well as in 'character'. And if, in addition to this, we grant Dr. Schiller's postulate in regard to the evolution of knowledge, *viz.*, that it is we ourselves, as purposively active beings, who have imposed and *do* impose upon matter those forms which we are accustomed to attribute to the object; that matter was originally wholly indeterminate and plastic; and that the 'common world' in which we believe, has been built up solely by the action and interaction of the minds of men and of the ancestors from whom they have been evolved; then, for us Truth will be *purely* subjective, a mental product which is made and not found or learned from objects; and which is expressive, therefore, not of the qualities and essences of external things, but of the Ego itself with its characteristic functions and its need-expressive purposes.

A denial of the objective validity of Truth is thus the inevitable outcome of the theory that Truth is a value whose content is determined by subjective conditions, just as an Ethical Subjectivism is the necessary consequence of the corresponding doctrine that the real objects of moral judgment are the springs of conduct whose 'worth' is determined by conscience on purely internal grounds. And though the Humanist may appeal to an Arbeits-welt, or to the common consent of humanity in general and of experts in particular, and Martineau to a Divine Being who manifests Himself in conscience and so confers upon its dictates unanimity, universality, and objectivity; yet neither can by this means restore to his theory the validity which his subjectivism has taken away. For a 'common world' which has been built up by the intercourse of different minds will be neither more nor less subjective than the elements of which it is composed. Different thinkers may agree to accept certain 'claims to truth' and to reject others, but unanimity so secured bespeaks merely similarity in mental structure, nothing more. And Martineau's appeal to 'the Voice of God' if it proves anything at all, proves too much. For, apart from the *Deus ex machina* implied in such an answer, it postulates a closer union with God than facts will vouch for, and savours of Ontologism, if not of something an individualist like Martineau would have considered far more erroneous, Absolutism.

There are, in fact, it seems to me, only two ways out of the difficulty, either a return to Absolutism or a return to Aristotle. The first alternative would provide a common Ground which, by an immanent revelation of Itself in finite centres of consciousness, would secure an approximate conformity of their thinking to its own, and would Itself provide an objective type or ideal which they were ever striving to realise in themselves. The second would give to Morality and Truth objective validity by making their content depend upon determination by objective entities and their relations. Either alternative, however, involves the surrender of the psychological method in part at least. Aristotelian and Absolutist are agreed that the knowledge of Subject and Object is immediate and is simultaneously developed. We can no more infer the nature of objects from the knowledge we possess of our own inner life, as the Idio-psychological method claims to do, than we can apply our knowledge of objective laws unreservedly to the self-conscious activity of the Ego.

Absolutism, however, goes further than this. It asserts not only that *in knowledge* subject and object imply one another and are essentially relative, but that the relation be-

tween them is *intrinsic* and *constitutive in a metaphysical sense.* Knowledge is but one aspect of the Whole. Nature, man, and God, are not merely in essential relation, but are *ontologically* continuous, and, at bottom, one and the same. Now, it is by no means the same thing to say that a subject implies an object, and an object a subject, as to say that Object apart from Subject, or Subject apart from Object, have no entity at all. The latter assertion seems to me to imply, as it did to Martineau, a pantheistic unity. Consequently, though the Absolutist solution is a possible one if considered in the abstract, and has actually been suggested by Prof. Jones in his centenary Lecture on Dr. Martineau as the natural complement to the Ethical principles of the latter, it is a solution which secures objectivity at the cost of both personality and freedom. Prof. Jones, of course, does not admit this conclusion; he even assures us that he would renounce his Idealism if he thought it involved such a consequence. Yet it is difficult to see how personality and freedom are to be saved if 'All' is reducible to One, and if the 'differences' of that one are, in reality, but immanent and intrinsic modifications or manifestations of Itself. Since, then, personality and freedom are so dear alike to Martineau and to the Humanist, they would, I think, prefer to make any sacrifice rather than take refuge in Absolutism.

The alternative solution — a return to Aristotle — would seem, therefore, at least to merit consideration. It, too, demands a sacrifice; but it does not involve the surrender of any notion so fundamental as those of personality and freedom. An Aristotelian Philosophy gives to both a full and real significance, and at the same time, is willing to grant that springs of action are to some extent determinants of morality, and that human needs and human purposes at any rate condition and direct the cognitive activities by which Truth is attained. But it does not make the springs of action either the *sole* determinants of morality or the *proper* objects of moral judgment, nor does it assign to human needs and purposes a predominant and exclusive influence in the determination of Truth. On the contrary, it insists that to the object must be allotted its proper place both in the sphere of knowledge and in the sphere of morality; and, in doing so, it is only reasserting on behalf of the object a right which common sense has always recognised.

In the first place, Common Sense never makes the spring of action the object of its moral judgments, as witness the strangeness with which these judgments strike us when expressed in such a way as to make them harmonise with

Martineau's theory. We are told, for instance, that "a child, not above the seduction of the jam-closet, finding himself in that too trying place and succumbing to temptation, has scarcely sucked the traces from his fingers before he is ready to sink into the earth with compunction, well knowing that the appetite he has indulged is meaner than the integrity he has violated" (p. 45). Or again, it is said that "When historians tell us of the plague-tainted city in which panic-stricken men and women herd together and drive away terror by drunken carouse and ribald song, we are appalled to think of appealing to as low a pleasure against so august a fear" (p. 45). Now, what child, I would ask, ever compares his appetite with his integrity, or what man condemns the revelry of plague-stricken multitudes because it implies that pleasure has been preferred to fear? Or, if you wish to put the question to a practical test, ask a friend on what grounds he condemns, say, Hooliganism. He may reply, as it were intuitively, that violently to disturb the equilibrium of a peaceful wayfarer, to pounce upon him, and generally maltreat him, is on the face of it immoral; or he may tell you that Hooliganism is an infringement of the liberty of citizens. He may remind you of the precept, 'Do unto others as you would be done by'; or he may enlarge upon the disastrous effects such actions would, if permitted, be likely to have upon society at large. But I doubt whether Socrates himself could elicit from him the answer that Hooliganism is immoral because it is prompted by vindictiveness or love of power, which impulses, when in conflict with social affection, ought not to be allowed to control our actions. We do at times approve and condemn *motives*. But a *motive* signifies an end in view, some action, some effect, or some state of consciousness, which we seek to realise, and not an impulse or spring of action. Springs of action, if condemned at all, are condemned because they prompt to inordinate actions, actions which lie outside the natural and appropriate sphere of influence, so to speak, of the Spring. And this sphere of influence is determined not relatively, but absolutely; not intuitively, but on extrinsic grounds which take into consideration object, end and circumstance.

Common Sense, then, is opposed to a Preferential Morality based on the relative worth of springs of action, and it is no less opposed to the Humanist doctrine of Relative Truth depending upon its power to satisfy human needs. Take any book on Science, Philosophy, or Morals. Why do we accept or reject, approve or condemn, the theories and principles advanced by its author? Our decision is based on

intellectual grounds, not on emotional or volitional considerations. We do not ask what emotional satisfaction the work in question may arouse within us—that will depend largely on its style; nor do we ask whether the author has proved what we wanted him to prove. We examine the accuracy and care with which experimental data have been collected and arranged; we ask ourselves whether the reasoning is valid, whether conclusions follow logically from their premises. We look out for obscurities, contradictions, unwarranted assumptions, ambiguities in the use of terms. We consider the bearing of the theories advanced upon other accepted theories in the same and also in other spheres of knowledge. This done, if the work as a whole and each part of the work is clear and convincing, we accept its doctrines as true; otherwise we reject them individually or *en masse* as false or at least unproven. And throughout the process, if it is truth that we are seeking, we shall exclude as far as possible the influence of our emotions and our will, and strive to found our judgment solely on objective evidence, *i.e.* on the evidence of the *things* themselves which are there discussed, as they present and reveal themselves to our intellects. Again, our assent, if given at all, will be given unconditionally. Decisions in matters of fact and of the explanation of fact are as a rule absolute, not relative. When we compare one theory with another and say that 'this' is *more satisfactory* than 'that,' or that 'this' *works better* than 'that,' we mean that, though there is not sufficient evidence to convince us of the truth of either, yet one has more evidence in its favour than the other; it works better, in the sense of being more consistent in itself, with fact and with accepted truths.

The Pragmatist is compelled reluctantly to admit the apparent 'absoluteness' of some truths, *viz.*, of axiomatic truths; but, in order to make his principles universally applicable, he assigns to these a postulatory origin in a prehistoric past. So drastic a reform in philosophical ideas requires some justification. On what grounds, then, does the Humanist place himself in open antagonism to the philosophy of common-sense? Why does he despise the claims of the object? Why strive to recast Truth, as Martineau recast Morality, in a subjective mould? The arguments of both are psychological. It was introspection that laid bare the ultimate and dynamic sources of action within the mind, and it is introspection that has revealed the thoroughly purposive nature of all cognition.

Now, in Martineau's case it would seem that his introspec-

tion was at fault. Moralists, with few exceptions, agree with Prof. Sidgwick that the object of moral judgment is not the spring, but the contemplated action itself together with its foreseen effects—'effects' here signifying 'every change internal or external, immediate or indirect, which in given circumstances may be expected to result from the volition'. Martineau seems, in fact, to have confused the dynamic source of action within the mind with the determinant of action. We may grant for the sake of argument that the springs are not as in many cases they appear to be, mere class-names for various kinds of action, and it will yet be true that the real determinant of all volition proper is the idea of the action to be performed and of its consequences, since it is this idea which controls and directs, in any particular case, the spring's specific mode of activity. Parental love, for instance, may be aroused in the mother by the sight of her suffering child. But the activity which results will be indeterminate, unless there are also present to the mind general ideas (*e.g.*) of the consequences of exposure to cold and of the efficiency of clothing, and particular ideas and images connected with the means of providing for the wants of youth; and it is these ideas of effects and means in particular circumstances which really determine action—a view that is strongly confirmed by modern psychological experiment, which tends to show that not only every idea but every sensation has at least some dynamo-genetic or psychomotive force.

The springs themselves being thus indeterminate, their morality must be of a like nature. Hence, to treat of them in a special Ethics from which object, end and circumstance are excluded as unaffecting their morality, or indeed, to predicate of them Moral Worth at all, is to take a narrow and one-sided view of Morality. It is irrational to separate the 'Ethics of Character' from the 'Ethics of Conduct,' for it is by conduct that character is to a large extent built up. What we are is doubtless more important from a moral standpoint than what we do, but nevertheless it is what we do that chiefly makes us what we are. A theory of Morals, therefore, which refuses to treat of Conduct, and declines to admit the object as a determinant of morality is inadequate and false. It is useless to urge that as the spring changes the Morality changes, for it is equally true that as the 'foreseen effects' change the morality changes. The question cannot be thus summarily dismissed by an appeal to Mill's Method of Concomitant Variations. The moral value of object, end and circumstance *must* be taken into consideration; and were it

not that Martineau in constructing his Scale of Excellence has in reality allowed their influence to weigh with him, his results would have been far more at variance with Common-Sense Morality than they actually are.

A similar criticism may be passed on the Humanist. His theory of truth is based on a psychological analysis of cognition. And just as Martineau confuses the dynamic sources of action with the determinants of morality, so he confuses the dynamic sources of cognition with the determinants of truth. Our needs certainly prompt us to seek knowledge and truth, and our purposes determine what kind of truth it is we seek. But neither purposes nor needs determine what we find to be the truth. Only the intent of thought is determined by them, not its content. As the Humanist says, we frame hypotheses, and seek in Nature their confirmation. But an hypothesis should not, and as a rule does not cause us to mutilate facts, nor do we reject facts which fail to harmonise with our hypotheses. On the contrary, the validity of hypotheses depends entirely upon whether experience will confirm them; in other words, it depends upon whether the nature of objects when apprehended by the mind agrees or disagrees with what we *supposed* their nature to be. Knowledge is essentially knowledge of objects, and were it impossible for the object to determine thought, cognition in the strict sense of the word would be non-existent. Sometimes, it is true, subjective conditions, prejudices, preconceived notions, habitual associations, do affect and may even wholly determine the content of thought. But they do so *per accidens*, and at the cost of truth; so that when we have reason to suspect that such influences have been at work we feel bound to discard our conclusions as false, or at any rate doubtful. The Humanist is right, in saying that all thought is purposive. We might even concede to him that in a sense 'human needs and human purposes permeate even our most remotely cognitive activities'. But he is wrong in inferring from this that the *content* of thought is affected by our purposes and needs, except in so far as they decide what questions we ask and what answers we *expect*. The answers as such, are determined solely by the object. Often enough they fail to satisfy our purposes and invalidate altogether our hypotheses, so that we have to start again on new lines, and look for other explanations which will better harmonise with our facts.

Again, in the inferences which the Humanist draws from his psychological analyses, he is, like Martineau, led astray by his exaggerated esteem for the dignity and all-pervading

influence of human personality. This it is which has caused him to neglect the real significance of the object in knowledge, and this it is, too, which has caused him to overlook the fact that knowledge is mediated not only by sensory images but by intellectual ideas, the *species intelligibiles rei* without which the nature of object could never be apprehended. In his energetic contempt for the pure and passionless 'thought' of the Absolute, he practically dispenses with intellect. The reaction against Intellectualism which Humanism embodies, is so violent that the functions of thought proper have been lost sight of and man is pragmatically identified with the volitional and emotional side of his nature. Dr. Schiller describes the intellect as 'a bundle of habits partly cognitive and partly volitional,' and Prof. James maintains that all ideas are but useful symbols, which, like the 'faint copies' of Hume are valid only if verified by sensations. Sense-experiences and symbolic processes together make up our cognitive apparatus: there is no need of intellectual apprehension. The correspondence-notion of truth is abolished once for all. Truth consists in experiences which satisfy our needs, and in symbolic reasonings which lead to such experiences. Experience and experiment, it is admitted, imply reaction on the part of the object. But why reaction upon a *rational* being should not result in intellectual ideas as well as sense-impressions, or how sense-impressions alone can give us anything worthy of the name of knowledge, we are not told. Absolutism exaggerated the function of the intellect; consequently the intellect must be degraded and belittled, if only to annoy the Absolutist.

Martineau, too, attacks the jurisdiction of the intellect. Though a firm believer in 'faculties' and in the specific difference between intellect and sense, he denies that intellect is a moral faculty. His arguments are far more clear and his use of terms far more precise than those of Humanism, which, despite its origin in the pragmatic principle of Peirce, is prone to ambiguity. "The knowledge which we have of relative right and wrong in the springs of action is," he says, "a unique and irresolvable kind of knowledge, introducing us to a quality neither given in perception nor accessible by inferences, and therefore requiring a special word to denote the function of our nature which secures its presence" (p. 407). The intellect has nothing whatever to say in regard to Moral Worth. By no process of reasoning could it ever arrive at anything beyond the 'true' as opposed to the 'right'.

The reasoning here is easily understood; but is it valid?

Granted that our notions of right and wrong are unique and irresolvable; that they cannot be analysed into a genus 'conformity' and a difference 'in regard to our rational nature as a whole,' or a genus 'fitness' and a difference 'for the attainment of our ultimate end'; granted that they are neither "given in perception nor accessible by inference" from the relation between God and man, between Creator and creature; I still think that though a special *word* may be *convenient*, a special function of our nature is *not* required to secure the presence of these unique and irresolvable notions, if such they be. Turn to any work on Metaphysics and you will find many such notions, 'being,' 'necessity,' 'cause,' 'possibility,' and the like. Why, then, should it be necessary to postulate a special Moral Faculty to give us the notions of right and wrong? There is, moreover, a department of Ethics in which the intellect does exercise jurisdiction. Conscience informs us only of the relative superiority of impulse over impulse. It tells us, for instance, that Social Affection is to be preferred to the 'Love of Ease,' but it does not tell us in what Social Affection consists. It is by the intellect that the proper object or sphere of action of each spring is decided; and the intellect has also to settle all questions as to the quantitative limits of the springs, and as to the proper means for securing to them the fullest activity. Such questions, however, are said to be 'beyond the resources of morality proper,' and are referred to a subsidiary rule, the Canon of Consequences, which is 'rather of an intellectual than of a moral nature,' and does not involve guilt, if disobeyed. Yet quantitative variations and the means by which we further the activity of the springs may affect their morality. We should condemn a father who through unbridled generosity to public institutions, beggared his own children, and we may question the morality of granting immunity to the criminal who turns King's Evidence. If, then, a spring is immoral when its activity is inordinate, or when the means by which it seeks to realise itself are themselves immoral, surely the Canon of Consequences is essential to right moral judgment, and Reason has as good a claim as Conscience to be called the Moral Faculty.

Intellectualism exaggerates the functions of thought; Martineau and the Humanists, unduly curtail them; and confuse them with the functions of sense. They err by going to the opposite extreme. Man's faculties must neither be multiplied unnecessarily, nor yet must they be identified one with another or absorbed in the unity of human personality. Yet the fact that Martineau is as much the enemy of

Intellectualism in Ethics as the Humanist is its enemy in Epistemology, is significant, and is due to a similar cause, partly to his Voluntarism and partly to his rejection of the objective point of view. It is impossible to say how much Humanists and Pragmatists have learnt from the late Dr. Martineau; but this at least is clear, that they are at one with him in their methods and their aims. His Ethical Studies and their Theory of Knowledge are expressive of the same movement of thought, a movement which leads us away from Absolutism towards Individualism and toward a philosophy whose standpoint shall be at once more practical and more human. Such a movement was needed as a protest against those philosophers who persist in treating man as a mere passing wavelet in the sea of an eternal consciousness. But for a permanent philosophical position we need a *via media* which shall give to subject and object alike their due value in knowledge and morality; and such a *via media*, it seems to me, can be found only in a return to the principles which constitute the essential characteristics of the philosophy of Aristotle.

II.—SPACE AND MATHEMATICAL REASONING.

By Leonard J. Russell.

I.

The object of the present paper is to develop a view of space on the analogy of that of number. Empty space will be found to have just such a significance as pure number has. On such a view, those who hold, with Newton, that space is a "thing" may rightly be compared with the Pythagoreans who looked on numbers as "things".

Thus at first, numbers and things were thought of together; next, number was found not to be bound up in particular things in this way, but to apply universally. It was therefore separated from things, and reality was predicated of it rather than of things. Things somehow became real because of their participation in number. The third stage was the abstraction of number from things, and its treatment as itself a thing. In the fourth stage, number is found to be unreal until applied to a content; it is thus seen to be a mode of determination of experience, one aspect of thought about things. It is a form, giving meaning to, and existing only as it gives meaning to, the matter of experience, which on its side has no independent existence.

In the language of matter and form: the form, number, and the matter, things, were first, confused and not distinguished; next, separated and reality predicated of the form, and of the matter by its participation in the form; next, form and matter were set up as equally real, the form being looked on as itself a matter; finally, form and matter were shown as existing and getting significance, only through each other.

With space, we are at present at the third stage; it remains to take the fourth step. The view of space ultimately come to will be found to be a modification of Kant's view, a development on lines suggested by Kant's own work. Kant's theory of space is made explicitly dependent on his view of Geometry (in the Transcendental Exposition). And mathematicians, attacking Kant's theory of Mathematics

(on the basis, I think, of a mechanical interpretation), have considered that they have thereby overthrown the views of space derived from Kant: and one of Kant's critics goes so far as to say,[1] "We leave to his disciples the work of finding what remains of his theory of knowledge, of which the theory of Mathematics appears to have been an essential part". The position attacked by mathematicians is expressed by Kant thus: "An *à priori* perception underlies all conceptions of pure space. Accordingly, no geometrical proposition, as for example that any two sides of a triangle are greater than the third, can ever be derived from the general conceptions of line and triangle, but only from perception."[2] Modern mathematicians deny this. Mathematics, they say, is a pure piece of logical reasoning, self-contained, never needing to go beyond its premisses.

In what follows I shall endeavour to state two of the typical theories of Mathematics, illustrating by the criticisms passed on Kant; I shall then state Kant's theory as I understand it, and set forth what seem to be the defects of the opposing theories. This done, it will be possible to proceed with the question of space.

The theory of Mathematics adopted by M. Poincaré may be described as a compromise, fitting various elements to one another externally in order to meet the various difficulties cropping up. Briefly, Poincaré's position is this: On the one hand, only deductive reasoning can give us accuracy; and on the other hand, the syllogism can give us no new truth. Yet the syllogism is the only instrument of deductive reasoning. How then is Mathematics possible? An expedient is adopted. The significant process, in Mathematics, is that of generalising a particular proposition; the most general method of doing this, that of mathematical induction. We must then add this to the instruments we already possess. Mathematical induction is distinguished from physical induction, which cannot give us certainty: "induction applied to the physical sciences is always uncertain, because it is based on the belief in a general order of the universe, an order which is external to us. Mathematical induction—*i.e.* proof by recurrence—is, on the contrary, necessarily imposed on us, because it is only the affirmation of a property of the mind itself"—of a "power of the mind which knows it can conceive of the indefinite repetition of the same act, when the act is once possible".[3]

[1] Couturat, *Les Principes des Mathématiques*, p. 306.
[2] *Critique*, p. 25, 1st ed.
[3] Poincaré, *Science and Hypothesis*, p. 13.

So much for the instrument: how shall we be sure that our science shall be rigid? Only by fixing our definitions and hypotheses rigidly and finally at the beginning.

We have next to secure that our science shall be useful—shall be capable of application to practical questions. This object is attained by letting Nature guide us in our choice of definitions. Thus the conventions we adopt, we adopt for the sake of simplicity and convenience, taking Nature as our guide. We thus secure a system of exact and demonstrable knowledge, which we can use in experience.

Several points must be noticed. Induction is not the only method of reasoning adopted in Mathematics, nor are the others reducible to induction and the syllogism. Induction cannot give us a complete proof of any proposition. Again, the defect which it is assumed the syllogism possesses, of yielding no new truth, is not remedied by induction. Poincaré simply makes Mathematical Induction a means of grouping together an infinite number of verifications, none of which gives any new truth. But an infinite number of old things grouped together can never give a new one. If the first act can give us nothing new, it is hard to see how the "indefinite repetition of the same act" can give us anything new either. If it is the grouping together of the particular instances which is supposed to give new truth, that can only be the case if we are embracing instances which we could not by any possibility verify. In other words, an induction (meaning by that a general formula, a short expression for a number of particular facts, none of which is modified by its connexion with the formula—and that is what Poincaré's induction is) an induction from particular instances can give new truth only in so far as the new truth is left uncertain, and a matter of inference. But in Mathematical Induction, while in one sense it is true that we cannot apply the reasoning to *all* the numbers, since there is an infinite number of them, yet in another sense, in applying it to the first pair we have rendered it unnecessary to apply it any further. Finally, by Poincaré's distinction between mathematical and physical induction, he leaves it uncertain whether Mathematics *will* apply in practice. For although the foundations of our science are in close connexion with Nature, yet the science itself depends on a power of the mind, whereas its applicability to Nature depends on "a belief in the order of nature, which is external to us". And our science will then be exact knowledge merely so long as we do not seek to apply it, but will be uncertain, directly we attempt to make use of it. I may add, that this is the defect

of all those theories which make a gulf between pure and applied Mathematics.

In Poincaré's theory we have two significant elements, which however are not developed into a system. First, it is recognised that the syllogism is inadequate to the demands made on it; second, the character of Mathematics as exact is obtained by separating it from experience and making it ideal and conventional. On the other hand, only *one* new instrument, induction, is added; while the usefulness of the science is attained by making convention follow experience. These two elements in Poincaré have been followed out to their logical conclusion in Mr. Bertrand Russell's theory of Mathematics, the result of which is that pure Mathematics is completely separated from all practice, and its application in practice only justified by means of careful experiments.[1]

In the first place, to the syllogism are added the principles of deduction supplied by symbolic logic as refined and improved by Peano; secondly, the conventions adopted are not limited to those which will be useful in experience. That becomes a subsidiary question. We set up all the hypotheses we care to set up, and proceed by the principles of deduction to deduce all the consequences. Then if we want to use our Mathematics in practice, we show that certain of the hypotheses are satisfied in experience. But there is one thing necessary before we can have perfect accuracy. All our words must be correctly spelled: to put it otherwise, all our hypotheses must be rigidly laid down in terms of certain indefinables, whose sense has already been agreed on, and which are capable of being treated by the principles of deduction.

"Pure mathematics is the class of all propositions of the form, 'p implies q,' where p and q are propositions containing one or more variables, the same in the two propositions, and neither p nor q contains any constants except logical constants. And logical constants are all notions definable in terms of the following: Implication, the relation of a term to a class of which it is a member, the notion of *such that*, the notion of rela-

[1] Mr. Russell's theory brings to a head the tendency of modern Mathematics. It is not merely, says Couturat, in the preface to his *Principes des Mathématiques*, which is professedly an exposition of Mr. Russell's work, "un brillant paradox, une fantaisie individuelle et éphémère, sans racines dans le passé et sans fruits dans l'avenir, mais l'aboutissement nécessaire et le couronnement de toutes les recherches critiques auquelles les mathématiciens se sont livrés depuis un demi-siècle". Later he speaks of Mr. Russell's work as "une vaste et profonde synthèse, qui est la quintessence des travaux antérieurs, et qui manifeste l'esprit même de la mathématique moderne"—a spirit, as he says, which is diametrically opposed to Kant's theory of mathematics.

tion, and such further notions as may be involved in the general notion of propositions of the above form. In addition to these, mathematics *uses* a notion which is not a constituent of the propositions which it considers, namely the notion of truth."[1]

"By the help of ten principles of deduction and ten other principles of a general logical nature (*e.g.*, 'implication is a relation') all Mathematics can be strictly and formally deduced; and all the entities that occur in Mathematics can be defined in terms of those that occur in the above twenty premisses. In this statement, Mathematics includes not only Arithmetic and Analysis, but also Geometry, Euclidean and non-Euclidean, rational Dynamics, and an indefinite number of other studies still unborn or in their infancy."[2]

In our reasoning we are concerned, not with what individual things we are discussing—that is unimportant—but with the relations we assert to hold between them. For in every case we deal with the relations, not heeding the terms; and the relations are asserted to hold hypothetically. If x is a y and y is a member of the class z then x is a member of the class z. This does not assert either that x is a y or that y is a member of the class z, nor does it tell us anything of x, y, or z. And the whole of Mathematics deals with hypothetical relations, independently of the terms.

This theory seems to be the opposite of Kant's, who states that from conceptions alone Mathematics cannot advance. Kant's theory of Mathematics is therefore subjected to rigid criticism. Several definite points of his theory are attacked, and denied.

In the first place, it is denied that appeal is made to intuition in Geometry. According to Kant, the philosopher may reason about his concept of a triangle (for instance) as long as he likes, and he will never prove that the three angles are equal to two right angles; he must construct the triangle in intuition and reason about it, using his intuition to help him. Only then can he get geometrical knowledge. Intuition means for Kant, according to Couturat,[3] "the mode of knowledge which refers immediately to objects, and by which they are given individually". The sense in which this is taken may be gathered from Mr. Russell's description of it as "the mass of unexamined prejudice which the Kantians call intuition".[4] Thus Kant is placed exactly on a level with the empiricists—Couturat treats him as such, saying that it is

[1] Russell, *The Principles of Mathematics*, p. 3.
[2] *Ibid.*, p. 4. [3] Couturat, *op. cit.*, p. 290, note.
[4] Russell, p. 260.

all one whether the intuition is *a priori*, as with Kant, or empirical, as with the empiricists.

If intuition is taken in this sense, Geometry, so far from seeking the aid of intuition, is only valuable in so far as it does *not* rest on intuition. Mistakes are often made by the appeal to intuition; and as a proof that intuition is not used it has been alleged that you could draw your lines with a corkscrew and your circles with a finger dipped in ink, and reason correctly on that figure. Rouse Ball in his *Mathematical Recreations* gives several interesting examples of direct contradiction resulting from the appeal to intuition in Geometry (which I "tried," some months ago, on a Mathematical class of boys. Generally the boys expressed disgust at being "done," the intuition appealed to not being of the ordinary type). And De Morgan somewhere speaks of a construction communicated to him by a student, for the trisection of an angle, the fallacy in which took him considerable time and trouble to discover.

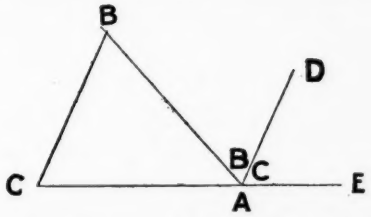
It may be replied that this misses the point, for there *is* a difference between mere empiric intuition and *a priori* intuition which Kant recognised; the recognition of which he regarded as the necessary condition of progress in the science. The advance in Geometry began, he said, when thinkers ceased simply reading off the properties of the figure empirically, but sought in the figure for the elements involved in the conception of the figure. The geometer had, said Kant, "to produce (by construction) what he had himself according to concepts *a priori* placed into that figure and represented in it, so that *in order to know anything with certainty* a priori, *he must not attribute to that figure anything beyond what necessarily follows from what he has himself placed into it, in accordance with the concept*".[1] Couturat therefore seems not to do justice to Kant's idea of intuition when he brings forward, as a proof that intuition cannot play any real part in geometrical reasonings, the fact that we may reason correctly on an inexact or even false figure, and incorrectly on an exact figure.

In the second place, it is denied that constructions must necessarily be made in Geometry. Euclid's constructions, it is alleged, are often quite arbitrary, needless, resembling a Chinese puzzle rather than a geometrical demonstration. And the tendency is to dispense as much as possible with constructions and to make propositions depend on ideas rather than on figures. Very many of the modern geometries use proofs which do not involve the appeal to a figure. And where a construction is used, the process is (or ought to be) simply that of making explicit what is involved in the hypo-

[1] *Critique of Pure Reason*, p. xii., 2nd ed.

thesis. Thus, the necessity for producing a line is simply due to the accident that only part of the line was given—a line being infinite in length; joining two points, simply amounts to saying: the two points determine a line; make it explicit. So, for instance (to take Kant's example) in proving that the three angles of a triangle make two right angles, our construction is not, to produce one side, and draw a line parallel to the third side, but to make explicit the sum of the angles—add first the angle B and then the angle C to angle A. This, if done in the way indicated, involves that the line AD is parallel to the line CB, and that the line AE is part of the straight line of which CA is a part. And the process is similar in every case. Here, it is alleged, we have a further argument against Kant's thesis. But what is this but the process Kant insisted on? Does it not correspond exactly to Kant's description of the process the geometer must follow?

Kant's insistence on synthesis and the appeal to intuition



is important, when we consider what a concept was to him. Really, Kant's "concept constructed in intuition" is equivalent to Couturat's "concept"; this is made clear by Couturat's discussion of Kant's treatment of the judgment 7 + 5 = 12 as synthetic. For Couturat, "seven added to five" and "the sum of seven and five" are exactly the same; for Kant the one is the concept constructed in intuition, the other the concept. Couturat complains that Kant admits that we must think the number twelve in the *addition* of seven and five, but not in the *sum* of seven and five.[1]

For Kant a concept was a general collection of marks, from which anything of the nature of matter (of experience) must be excluded as far as possible; and reasoning about a concept was simply the splitting up of it into its component parts. Thus he says, "The philosopher can reflect on the concept of triangle as long as he likes, and he will never get anything new. He can decompose it and make distinct the conception of a straight line, or that of an angle, or of the number three,

[1] Couturat, p. 258.

but he will arrive at no properties not found in these concepts."[1] Thus reasoning about the concept of a triangle would produce some such result as the following:—

Triangle = straight line, angle, three.
Line = length, no breadth.
Straight = between extreme points, even.

Thus so far, Triangle = { length, no breadth, between extreme points, even, angle three.

The power of analysis fails me; I cannot decompose the concept three; I do not know whether Kant would agree with my analysis of straight: but when each thing has had its marks disentangled, the triangle is simply the collection of marks. It is evident that all this can give no new knowledge—that it is a destruction rather than a construction. Kant's good sense was too great to allow him to accept this as reasoning; but he still kept the old idea of concept. Hence, he said that the concept needed construction in intuition, and that then we must reason only from those properties which accord with the concept. Kant was thus really changing the meaning of concept. And further: in any piece of reasoning his question would be, not, What are the properties I can read off by inspection of the figure I have drawn? but, What are the conditions of the possibility of the figure which represents my concept? For Kant all reasoning must be *a priori* and synthetic; in other words, all proof must be by a transcendental deduction. It must, that is, deal with elements in experience, but it must deal with them in the way of asking what are the necessary conditions to be satisfied if these elements are to be possible. We must proceed from the elements to the conditions of their possibility; and this is very different from the empirical process of reading off their properties. And in this, Kant was striving towards a conception of reasoning which is in advance of that of the modern Mathematicians.

Hence Kant would have accepted the criticisms which have been passed on Euclid's proofs, and would not have considered them at all hostile to his own theory of Mathematical reasoning. They have been put forward as arguments against Kant, and they furnish an excellent example of the ideals of modern Mathematics. "The propositions of Euclid," it is said, "involve a great number of assumptions which are incorporated into the proofs."[2] Hence the reasoning is unsound, involving as it does unexamined assumptions. These assumptions are made by an appeal to

[1] *Critique*, A 716; B 744. [2] Russell, p. 407.

simple intuition. In the first proposition of Euclid, for instance, it is simply assumed that the circles cut; there is no proof that they will do so. We see that they do: that is all there is in it. This then is an assumption made for convenience; it ought, however, to have been incorporated into the definition of space, or deduced from that definition. And so, all through, we are assuming properties of space; we have no right to call our science rigid until we have disentangled these properties—which are accepted on the word of intuition—and made them either parts of the definition of space, or consequences of that definition.

But what is the process really? Beginning with a simple conception of space we gradually go on to add elements, by considering the conditions of the possibility of the conception we have already. In the first proposition we use the fact that the circles cut; the unexpressed reasoning is that their cutting is a condition of the possibility of our conception of a straight line and two circles in a plane according to our definition and construction. It is not, that they cut in this figure and in any other figure we care to draw; but, that unless they cut necessarily, then our conceptions are impossible and meaningless, and we shall have to go back and alter some of them. Then when we have discovered all these conditions we can sum them up in a much fuller definition of space, which will serve as the starting-point of a new and similar process; but this full definition of space must be the end of our labours, and not the beginning. All through, we are on the "sure path of science"; and the criticism to be urged against Euclid is not, that it appealed to intuition in Kant's sense, but that it did not quite know what it was doing, and as a consequence, did not do it quite perfectly.

It is interesting here to note Couturat's definition of analytic and synthetic. It is to be remembered that he considers Kant to hold Mathematics to be synthetic, while he himself holds it to be analytic, in the sense of his definition.

"Whatever is contained in the definition of a concept or can be logically deduced therefrom, is analytic in character; whatever is added in virtue of a necessity beyond logic, is synthetic in character."

Again, "A judgment is analytic, when it can be deduced solely from definitions by the principles of logic; synthetic, if its demonstration (or verification) supposes other data than logical principles and definitions".[1]

[1] Couturat, p. 246.

There is no necessity beyond logic; but Formal Logic—the symbolic logic of Peano—is not the only logic; and if we admit this, then we may say, that Mathematics is synthetic (as well as analytic) in the making, and analytic only when made. And if we are Kantians, we shall see fit to add, that Mathematics is always "in the making," and that, in the making, it uses Transcendental Logic.

The existence of non-Euclidian Geometries was formerly supposed to supply a complete refutation of Kant's theory of space. But, as has been pointed out, they go to bear out Kant's theory rather than the reverse. For he admits that many geometries are possible *logically—i.e.*, geometries working out the consequences of various hypotheses; all that need be asserted is that for us to tell with any certainty which is the geometry of actual space, we must have an *a priori* intuition of space. For experiment cannot give us necessary truth. I shall therefore postpone the discussion of the significance of the various geometries until I am in a position to deal with this further aspect.

But there is still Mr. Russell's theory of Mathematics to deal with. For it asserts that final definitions *can* be given of the various elements used in Mathematics, and that there is no need to do any more than work with these elements, using the principles of deduction. This then constitutes a direct denial of our assertion that the definitions of Mathematics cannot be made final, and that Transcendental Logic must be used.

The criticism of the theory which I shall make may be summed up thus: Granted that Mr. Russell's description of Mathematics is so far correct, it is a description only of the instrument used in giving Mathematics its final form, and tells us nothing concerning the use of that instrument. Hence it is inadequate for the development of the science. As a piece of work which has its definite place in the development of Mathematics, Mr. Russell's work deserves all Couturat has said of it; but as a complete account of Mathematics, it is totally inadequate.

Briefly, Mr. Russell's theory is summed up in the words, "By the help of ten principles of deduction and ten other principles of a general logical nature, all Mathematics can be strictly and formally deduced: and all the entities that occur in Mathematics can be defined in terms of those that occur in the above twenty premisses".[1]

Pure Mathematics then consists in (1) laying down cer-

[1] Russell, p. 4.

tain hypotheses in terms of the indefinables mentioned, (2) deducing the consequences by the use of the principles of deduction. There is no need to appeal to any intuition, or to go outside the hypotheses and the principles of deduction.

Let us take an analogous case. To get every word in the English Language, take twenty-six letters, and certain principles of combination, and proceed. Pick out a letter, K. Then according to the principles of combination you can use either *l* or *h* or a vowel, etc.; choose *e*. This gives the combination, *Ke*. This is the second step; it is one word; it may be used hereafter as a single letter if we wish to shorten processes. (Similarly we can use all our words as single letters, to shorten our processes.) Finally, by successive combinations, we get, say, *Kennedy*. The defect in this process is that we get a great many more words than those in the language: and also, that we shall probably never light on *Kennedy*, however badly we want it. If we had *Kennedy*, we could see whether it was a possible word—*i.e.* whether it could be built up by our instrument; but our instrument would not aid us in discovering it. Before we have the language we need much more than this.

The same holds with Mr. Russell's argument. The whole process, he insists, is purely formal. Let us see if it is. Make it purely formal. In all your logical principles you have no concrete principle which shall tell you how to develop your subject. So you must simply proceed haphazard, as in the case of words. Choose a particular hypothesis and a definition. These will enable you to choose a principle of deduction which will serve to combine them. This combination corresponds to *Ke*. In Mathematics it will be called a theorem, and may be used as a simple result in subsequent work. Proceed thus, and you will get by degrees every proposition in Pure Mathematics. But the pity is you have got too many. Suppose you have a problem on hand—something in Physics for instance. You need at a certain point the help of Mathematics. Which result will help you? Try them and see. In Pure Mathematics itself there is no system, no clue to guide you in the search. You will have to go over every theorem—alphabetical reference-books will perhaps be compiled. It reminds one of the word-making puzzles once fashionable—to see, *e.g.* how many words can be made out of "Manchester," where, without system, we look up a dictionary and go over every word in it, ticking off those we want.

How then shall we find a shorter way than this? Unless somehow we get an idea of the sort of result we want, and

unless somehow we are able to connect this with results we already have, our logical process is useless. It is only an instrument; it needs to be directed to some end, if it is to be of any value. And it is precisely this *direction* which Mr. Russell does not account for; and precisely this direction which is the great question. Though the results can be *reduced* to twenty premisses it by no means follows that they can be *deduced from* the twenty premisses without anything else. Give Mr. Russell his definition of Projective Space of three dimensions[1] and from it ask him to evolve Projective Geometry. I do not think he could, immediately; after having dealt with Projective Geometry by using lines and figures he would be able to, with sufficient trouble—by translating, or by analogous reasoning. Then another thinker who knew no Projective Geometry could follow the deduction, but he would have strictly to follow. Then the question arises, Is this fact a consequence of imperfection in our thought, or is it a consequence of the nature of reasoning?

Mr. Russell's view rests, ultimately, on the idea that the complex must be shown to be resolvable into the simple, and can only be shown to be true as so resolved. That when we have done this, we have done all we need; we have fully accounted for the complex. To use a favourite metaphor of the Greeks, Mr. Russell thinks that when he has spelled a word he has explained it fully. The fact is, that it is the simple which needs to be explained in the light of the complex; and after we have resolved the complex into the simple—a very necessary and important part of the work, but by no means the whole of the work—we must then proceed to explain the simple in the light of the complex, show how the simple can be built up into the complex. With the complex we must begin and end.

How then has Pure Mathematics come to be what it is? A rough sketch of the development of Geometry will suffice at present. In the first place we deal with actual things, and (probably by faulty methods) prove results about them, assuming hypotheses we have not made explicit. Gradually it is found that certain hypotheses have been implied, and the consequences of these are worked out with more rigour, giving results similar to those previously obtained. Some of these hypotheses are then questioned, and it is found that others have as good a claim to be used. The consequences of these are worked out by methods analogous to those used in the previous case. Mr. Russell describes it thus:[2] "Hav-

[1] Russell, pp. 430-431. [2] P. 373.

ing found that the denial of Euclid's axiom of parallels led to a different system, which was self-consistent, and possibly true of the actual world, Mathematicians became interested in the development of the consequences flowing from other sets of axioms more or less resembling Euclid's. Hence arose a large number of Geometries, inconsistent, as a rule, with each other, but each internally self-consistent. The resemblance to Euclid required in a suggested set of axioms has gradually grown less, and possible deductive systems have been more and more investigated on their own account. In this way, Geometry has become (what it was formerly mistakenly called) a branch of Pure Mathematics, that is to say, a subject in which the assertions are that such and such consequences follow from such and such premisses, not that entities such as the premisses describe actually exist."

Thus in all this we are working either in actual contact with things, or else by methods derived from such working. And if it be objected that this historical account does not touch the question, I reply that the final stage of a product can never be taken as the thing itself, unless it contains in itself the principle of its development. And it is just this we are seeking in Mathematics, and it is to be found, I must contend, from a consideration of the development of Mathematics, rather than from a consideration of the last stage alone.

Is mathematical reasoning exact? No. It is a process of attaining exactness. We use a concept at first vaguely, and prove things of it loosely. There is no clear indication (nor as yet is it necessary) of the notions essential to the proof, or of the extent and matter for which the proof will hold. Sooner or later this leads us into difficulties, caused by our applying the theorem where it is not applicable. All definitions are of the nature of scientific hypotheses. They are tentative. When we come to a contradiction, we begin to refine. We define our concept rigorously *with reference to the things we want it to be able to prove*—notice particularly what this means; this definition needs a mathematical genius to effect it, and it is really the compression of the subsequent proofs into a small space—and gradually deduce results by proper chains of reasoning. But this does not come about mechanically. It needs men trained in mathematical methods, and above all, fully cognisant of mathematical needs.

People speak as if you had your definitions fixed simply by looking at a thing and saying clearly what you meant by

it. Then you reason about it and get new results. But the fact is not this. The definitions are the result of a long development of the subject vaguely, and then a critical regress. What is deduction? How are we able to say that P implies Q? *It is because of the process by which we arrived at P.* All deduction is a correction of our first abstraction. We have fixed our abstraction, and made it self-subsistent. We then find that it is so only on certain conditions. Unless it is certain other things it cannot be the thing we said it was. Hence all deduction is a process of rendering our first abstraction more concrete. Mathematical induction, for example, aids us in bringing to light the general principle involved in a particular proposition. This is to *concretise* the particular proposition.

Each step forward involves a partial reconstruction of the whole; elements are brought to light which were formerly neglected and which cause us to modify our view of the whole. This is what all reasoning is, and it is as true in Mathematics as in any other sphere. Examples of this process in Mathematics—and they might be multiplied indefinitely—are:—

(*a*) The modification of the definition of multiplication rendered necessary by the introduction of fractions and negative quantities in Arithmetic.

(*b*) The modification of the definition of a differential quotient consequent on the further development of the Calculus.

(*c*) The reconstruction of the theory of number necessitated by the development of the theory of functions.

It is these two last, chiefly, which have issued in the critical regress on Mathematical concepts and methods represented by Mr. Russell's work; the first is a striking instance of the Mathematical habit of widening a definition in order to make it perfectly general.

Thus Mathematics is being continually modified; its fundamental definitions—even its most fundamental—are never quite final, but are being constantly rendered more precise. There is no special virtue in the reasoning—mathemetical reasoning is just the same as any other; but the things we are reasoning about are more abstract, and the notions regarding them can be more definitely and more clearly stated, so that men need not go wrong through preconceived ideas. They do go wrong sometimes—but this is almost invariably the occasion of an advance by means of a modification of some piece of work hitherto regarded as final.

Every great thinker, in so far as he represents a tendency

and is not merely peculiar, proves something very different to what he thinks he has proved, and something far more important. Thus symbolic logic in general is in the very front of the Kantian tendency; and Mr. Russell, in attempting to do for Modern Mathematics what Euclid did for Geometry twenty-two hundred years ago, is preparing the way for a fresh advance, for another and higher reconstruction of the foundations of Mathematics in the future. And the method he exemplifies is the Transcendental Method.

II.

Much has been written regarding the meaning of the various systems of Geometry. We have already seen how these systems arose. At first the axioms of Euclid were unquestioned; then certain of them were questioned and others set up in their stead; on the new hypotheses a different Geometry was worked out by methods analogous to those employed in Euclid's Geometry, and gradually various systems were evolved, with hypotheses differing very widely from those of Euclid. Thus the idea of "Geometry as the science of all the possible kinds of space" suggested by Kant in an early work, is rendered actual.

What is the significance of all this? How shall we choose which is the Geometry of actual space? According to Mr. Russell, the matter is one to be settled by careful measurements. "Geometry may be considered as a pure *a priori* science, or as the study of actual space. In the latter sense, I hold it to be an experimental science, to be conducted by means of careful measurements."[1]

Now in the first place, measurements will not enable us to discriminate between the different Geometries. For a great number of the geometries give us results approximating so closely to the Euclidean Geometry that no experiments are sufficiently accurate to be useful. Thus to take the classical instance, in the Geometry of Lobatchewsky the angles of a triangle would be less than two right angles. But the difference between the sum of the angles and two right angles is so slight for all ordinarily sized triangles (it varies with the area of the triangle) that we should be compelled to take extremely large triangles; and in astronomical triangles we have to use the path of a ray of light, assuming it to be a straight line. But here is a new complication; it is put by Poincaré as follows:—[2]

[1] Russell, *The Principles of Mathematics*, vol. i., p. 372.
[2] Poincaré, *Science and Hypothesis*, p. 72.

"If Lobatchewsky's Geometry were true, the parallax of a very distant star will be finite. If Riemann's is true, it will be negative. These are results which seem within the reach of experiment, and it is hoped that astronomical observations may enable us to decide between the two Geometries. But what we call a straight line in Astronomy is simply the path of a ray of light. If therefore we were to discover negative parallaxes, or to prove that all parallaxes are higher than a certain limit, we should have a choice between two conclusions: we could give up Euclidean Geometry, or modify the laws of optics, and suppose that light is not rigorously propagated in a straight line. It is needless to add that every one would look upon this solution as the more advantageous"—and, as we shall see, the more logical.

And hence Mr. Russell is compelled to say, "It cannot be maintained that no premisses except those of Euclidean Geometry will yield observed results; but those which are permissible must closely approximate to the Euclidean premisses".[1]

In the second place, measurements tell us nothing about space itself. They only tell us about relations of bodies in space to one another. And this is significant. Let us see what it means.

Euclidean Geometry, as it stands, gives us certain definitions of straight lines, planes, and so on; we on our part take the things we draw as representative of, or as containing as ideal elements, the things defined. But it does not give us, at least not at first, any way of getting the entities exactly. Then later on, it gives us a method (the method of Peaucellier's cell) of drawing a straight line by a geometrical construction. But in this construction we must assume, first, that the geometrical properties of physical bodies are unaltered by mere motion, second, that we have a Euclidean plane on which to effect our construction. We might possibly have a similar method by means of which we could draw a plane by a geometrical construction. This would only involve the rigid fixing of a point, along with the assumption made above regarding motion. Then our entities would be completely specified, and we could compare the planes we ordinarily use, and the straight lines we ordinarily draw, with the plane and straight line got by our geometrical method. This seems to be the only logical method of testing our constructs.

The plane and straight line analogously obtained by means of Lobatchewsky's Geometry would be different. And the

[1] Russell, *op. cit.*, p. 442.

most careful measurements, if they could be conducted in this way, would only tell us whether what we had drawn was a straight line or plane of Euclid or of Lobatchewsky, and could tell us nothing of space itself. From this point of view the definitions, axioms, and postulates are all parts of the definition of the elements—of the constructions, that is, to be made *in space*—which are to form the subject-matter of the Geometry. They are not at all hypotheses regarding the nature of space. They do not say, "Let our space be of such a nature that ——" but "Let our *constructs* in space be of such a nature that ——". Hence there is not in this a question of different spaces, but of different elements in space. Pure Geometry is thus, not "a science of all the possible kinds of space," but a science of all the possible species of constructs in space. When we want space, it puts us off with a spatial determination. And, of course, we do not need anything more.

This point of view is borne out by the fact that propositions in one Geometry can be translated into any other Geometry. In other words, we can draw up a list of terms in the one Geometry corresponding to terms in another Geometry. Let us consider why. Let us take as a plane in one geometry, the surface of a very large sphere; in another, the surface of a very large ellipsoid. Define as a straight line, that which lies evenly between its extreme points. And define perpendicular, the various kinds of triangle, and so on, in the same way as in Euclid. Corresponding to the same definition, we shall have different lines in the two cases. The axioms and postulates, and hence the propositions, will be different. Is there any way of comparing the propositions arrived at in the two cases? Obviously if we can express the straight line, the right angle, etc., of the Ellipsoidal Geometry in terms of the elements of the Spherical Geometry —and we can do it by means of Analytical Geometry—then any proposition arrived at in the Ellipsoidal Geometry can immediately be expressed in the Spherical Geometry; and *vice versa*. And this is precisely the relation between the different systems of Geometry: they are systems dealing with different constructions, the elements being defined by definitions, axioms and postulates, and rendered more precise by the propositions derived therefrom.

The analogy between the different number-systems and the different Geometries should be noticed. The theory of number arose in practical needs, and gradually became a separate and ideal science. The system in general use is the decimal system; and the definitions and multiplication table

are laid down with reference to it. But there are very many other systems—the scale of seven, eight, nine, etc. The definitions and multiplication table in these are different. One branch of the theory of numbers lays down such theorems as the following: A number in the scale of ten is divisible by nine if the sum of its digits is. For each system there is a corresponding theorem. These theorems bear a close resemblance to the theorems of the various Geometries. Thus we have various numerical systems, with propositions peculiar to each. All the systems are alike applicable to things, considered quantitatively. But if it were suggested that we must have recourse to experiment to see which system applies to actual number as it exists, we should have to point out that experiment would tell us, for example, whether any given collection, described as 18 say, could be so described in the decimal or in the nonary system, but nothing more. Number itself we cannot get. And so with the Geometries. The only thing we can attempt to discover is whether any given element in experience, described say as a straight line, can be so described in the Euclidean or in some other Geometry.

Our question, "How shall we choose which is the Geometry of *actual* space?" therefore takes the form, "How shall we see whether the constructs we ordinarily consider as straight lines, planes, circles, are Euclidean or non-Euclidean? Simple experiment, we have seen, cannot discriminate sufficiently. Hence the question turns on the choice of the simplest of those Geometries between which experiment is unable to distinguish. But there is one property which, Couturat points out, is a simple matter of intuition and common to all Geometries—the three dimensional character of space. Hence, he thinks, intuition and convenience (intellectual convenience) are the things which together enable us to select Euclidean Geometry as the most useful.

But let us connect this with the process by which experience is built up. All building up of experience takes place by a process of successive approximation. This is another aspect of the process we have described already, of the transformation of premisses. We cannot deal with a thing in its entirety; we are obliged to pick out one aspect of it and proceed as if that aspect were not affected by any other conditions. With reference to that we attempt to explain everything; gradually this attempt leads to the necessity for a reconstruction, a discovery of the limitations of our previous view, and the setting up of a more complex aspect as final.[1] It is for this reason that intuition, experi-

[1] *Cf.* Thomson and Tait, *Natural Philosophy*, vol. i., part ii., §§ 438-446.

ment, and convenience pick out the science most useful in experience; we choose the simplest because it is the only thing we could choose. Everything else presents a problem which can be solved only through the simple. The view of the complex of experience which can be grasped at first is of it as a simple complex, presenting problems; gradually this simple complex grows in complexity. Thus at first the idea was, Find out the numerical properties of things and you have the solution of your problem; this was expressed, Number is the real thing. Next, Find out the spatial properties of things and you have the solution; this was expressed, Space is what is real. And again, Find out the mechanical properties of things and you have the solution; this was expressed, Matter and motion are the real. Still again, Find out the teleological properties of things and you have the solution; this was expressed, Thought is what is real. All this had happened by the time of Plato; since then, each of these aspects has been gradually growing in complexity. Each is seen to be an aspect of experience merely, and to be included in the aspect next above it. Number has long since come to be considered as, in itself, an abstraction; it has long been seen that bare number does not form a part of experience. It is time the same step were taken with space. With matter and motion, even with thought, the same may be said. As abstract nouns merely, they are unreal; they are real and significant only as they are adjectives as well.

Within each aspect we have the same thing. Number at first was bound up in sensuous things; it was not seen to be an ideal element in experience. Later what represented number was the decimal system of notation; gradually other systems grew up. At present these are seen to be determinations of number according to various schemes. And in this penetrating through the sensuous element to the ideal element in number, the science of number is not thereby going away from experience, but coming the more closely to experience—for it is rendered more efficient as an instrument in the solution of problems. It is all the while growing in complexity—from the abacus to modern theory.

With space we have a similar development. Geometry is gradually breaking away from the fictitious object, space, which we are wont to picture; Euclidean Geometry is seen not to be the Geometry of a particular space or of our space, but the science of one of the systems of determinations of space. Other systems are seen to be possible, more complex, in a sense more remote from ordinary experience. But Geometry, as number, in becoming more general, in dealing

with the ideal element and ceasing to be bound up in the sensuous element, is thereby becoming more powerful as an instrument of attack, and is thus coming nearer to experience rather than going away from it. Pure space is, in itself, ideal, and apart from any determination in experience, unreal. In experience there is no such thing as pure space.

This I take to be the significance of the various Geometries —that they are showing space to be in most respects analogous to number. Thus what Prof. Bosanquet says of "the apparently independent reality of number," applies similarly to space. "Such a generalised scheme, though meaningless except as applied to a positive content of thought, contains nevertheless definite and necessary relations which are imposed by it on any content to which it is applied; and the presupposition that it is taken as applied to an adequate content fades into forgetfulness that it need be applied to a content at all."[1] But in pure number, and in pure space, as we have seen, there is not even any generalised scheme. They have no determination, and contain in themselves no principle of determination. Thus the idea of space as a "real individual object" being the idea of something which is empty and void of any power of self-concretion, falls into line with the empty "thing-in-itself". Space as an element in the thought-determination of experience—meaning thereby the various Geometries as applied to experience—is concrete, growing in complexity as it is applied; but corresponding to pure abstract space there is nothing in experience.

"Admitting, as we must admit for logical purposes," says Prof. Bosanquet,[2] "that space is to be reckoned with as having a peculiar actuality of its own, still it is not clear in what relation geometrical figures, apart from the shapes of actual objects, stand to actual space. Geometrical figures as such are not the shapes of actual objects; they are not identical with any perceptible figure; they are not distributed through space nor present as special characteristics in any portion of it. I do not know how to describe them better than as a peculiar class of *laws* or *attributes* of the spatial relation as such, which are concrete in the nature of their content, though abstract in their medium of presentation. And in the same way the characteristic totalities of number must be taken as laws—embodied laws—of the enumerative relation of part and whole."

"Actuality in sensuous presentation they cannot have. But we do not of course admit that Reality is restricted to

[1] Bosanquet, *Logic*, vol. i., p. 167. [2] *Ibid.*, p. 193.

sensuous presentation. All we can say is that in all relations of actual things these spatial attributes make themselves evident as controlling conditions, and are introduced as conceptions without which the mind fails to construe the phenomena."[1]

It is to be noticed that in none of this is there any attempt to answer the question in what relation geometrical figures stand to actual space. That is as difficult as the question in what relation numbers stand to actual number. It is a useless question, put in that form. Space, like the laws of nature, is an abstraction when considered apart by itself; it is not "writ in the sky" any more than they are. And yet apart from it, phenomena fall asunder into lawlessness. It has precisely the same kind of existence as they have—as an ideal element in the growth of organised experience. And it is *a priori* in the mind in the same way as they are; it is a "system of relations constituted by the mind in the process by which mere sensation becomes knowledge".[2] This is a denial of Kant's theory if to Kant be attributed the idea of an *a priori* perception which in no wise differs from the empirical; but it is in every sense the result to which Kant's philosophy pointed.

It now remains to consider in some detail the various positions held by believers in absolute space. Is there such a thing as absolute motion in space? The reply, of course, due to the conception of space above put forward, is, that there is not. Newton's argument, however, according to Mr. Russell, remains unanswered. I state it in his words. "If a bucket of water is rotated, the water will become concave and mount up the sides of the bucket. But if the bucket be left at rest in a rotating vessel, the water will remain level in spite of the relative rotation. Thus absolute motion is involved in the phenomenon in question."[3] Let us explain the difficulty.

(1) If there be nothing outside the bucket, rotation of the bucket becomes a meaningless term. The rotation of the bucket only has meaning with reference to things outside. But (2) rotation with reference to things outside does not affect the question at all.

The physicist is thus compelled to define and measure the rotation with reference to external things, and his solution of the problem depends on his measure of the rotation: and

[1] Bosanquet, *Logic*, vol. i., p. 195.
[2] Green, *Works*, vol. ii., p. 239.
[3] Russell, *op. cit.*, p. 490.

yet the rotation with reference to external things has no connexion with the problem.

This is a difficulty for the physicist who believes in relative motion. For the physicist who believes in absolute space the difficulty vanishes. For then the motion sought after is the motion with reference to absolute space, and it is this which enters into the problem. That this cannot be found does not affect the question, for it is that which is sought after. And the believer in relative motion has no such means of defining his motion.

The deep contradiction inherent in the idea of absolute motion will appear later; meantime there are other criticisms.

Will absolute space really help us to do anything more than *picture* the motion? Is our absolute space not really a putting aside of the difficulty rather than a solution of it? Mr. Russell is compelled to use the idea of absolute space consisting of points, which are all ideally separate and distinguishable. With reference to these points the body moves absolutely. Putting aside for a moment the question of the validity of this idea of space, let us ask if it will help us. Mr. Russell contends that the points are all ideally separate and distinguishable. But an absolute space of this nature is, by its want of determination, by its very idea, infinite, nor can we imagine it finite. (I refer here to the actual existent space: in any one of Mr. Russell's spaces, of course, the points could be numbered with reference to the process of constructing the space.) And hence there is no possibility of distinguishing the various points absolutely, but only relatively to one another. We should have to set up "imaginary axes" even in this space. And we are left with the result that our space is useless. For it is unable to help us to describe our absolute motion. And it is a significant fact that, when we come to consider the physicist's solution, we find no reference to absolute space. This will appear later.

The difficulty arises from the treatment of relative motion as if it were the only thing to be taken into account. The present attempt in Physics is to banish the idea, even the word, force, from the science, and to treat Physics as dealing wholly with motions and changes of motion. I think that Mr. Russell's insistence on Newton's paradox is valuable chiefly as showing the very great number of assumptions made by scientists when they speak of relative motion. The fact is, that when the physicist speaks of the motion of one body relatively to another,—for example the rotation of the water round the axis of the bucket—he is making a great

number of assumptions regarding the action of bodies on one another, assumptions which he has come to make in the gradual development of his science. And in the case of the bucket left at rest in a revolving vessel, we have not a case of relative motion in the physicist's sense. Dynamics deals with motions of bodies only in so far as they are due to, or affect, the motions of other bodies. Hence if dynamics discovered that, while B moved round A, yet B's motion was unaltered by any change in A, it would conclude that to say that B moved round A was an incomplete description of B's motion; that it was a statement which dynamics had to consider, but that the further description of the motion was the important thing.

And here is the solution of the difficulty. The difficulty arises from thinking that *any* relative motion will serve completely for the purposes of dynamics; and, on finding one which will not serve completely, arguing that therefore none will, and that we must seek absolute motion. The difficulty of selecting the appropriate relative motion is very great; in some cases it takes years—and a Copernicus; in some cases a good student may puzzle for an hour or so. But the chief thing is to select the appropriate relative motion—since anything more we cannot get, and anything more would not help us. This selection is of the nature of a hypothesis—we choose the motion which will best help us to co-ordinate the facts.

And now arises a difficulty. Suppose our earth were clouded over always, so that we saw no change in the sky; and in time, physicists were compelled, by various experiments, to conclude that the earth turned on its axis; would they not be compelled to believe in absolute space? That they would have to suppose imaginary axes set up in space in order to represent to themselves the motion, is certain; but would this prove that an absolute space existed? I confess to a want of faith in my opinion on this point; I have dubious leanings to the idea that the motion would become conceivable in course of time, without reference to anything beyond the earth; that people on the circumference would conceive themselves *looking towards the axis*, and changing their position relatively to it, considered fixed. If the Universe were a finite mass with nothing (absolute nothing) outside it, I am dubious as to whether rotatory motion of it would have any meaning—I rather think not: but I am as dubious whether it would mean anything if there were space instead of nothing (whatever that may mean). In fact, I can see no difference between the two cases.

And I am at liberty to contend that, if a motion is meaning-

less, it does not exist; and the necessity for altering that conclusion is, to say the least, a very remote contingency.

The physicist's point of view is, I think, admirably summed up by Poincaré.[1] "As a matter of fact the difficulty is artificial. Provided that the future indications of our instruments can only depend on the indications which they have given us, or that they might have formerly given us, such is all we want, and with these conditions we may rest satisfied." And we might go on to say, that all Mathematics is constantly dealing with things which are purely imaginary, if considered in themselves—fractions, negative and complex numbers, and even, perhaps, axes in space.

For the last few pages our curiosity has been growing—as to what Mr. Russell's theory of space really is. We therefore proceed to discuss it. Space consists of points. It is an aggregate of points, and is defined in terms of points. Different spaces are built up as follows: We begin with two, three or four points, which are indefinable; and then, laying down certain definitions and axioms as regards the relations holding between them—these relations are arbitrary, a matter of choice—we proceed to put in more points, and so gradually build up our space. For instance, beginning with two points between which we assert certain relations to hold, we might lay down as an axiom that there is a point which has certain other relations to any two points in the space. This would give us a new point; this new point with each of the others would give, by means of the axiom, a further point—five in all; and our axiom (with new axioms on occasion to ensure our process continuing) would enable us to put in a great number of points. And as we proceeded, we could lay down other axioms which would enable us to put in an infinite number of points, arranged in orderly fashion. Thus a space is defined wholly with reference to the manner in which it is built up out of points; these points are indefinables, and the relations holding between them are independent of the points. "Space is nothing but the extension of the concept point, as the British Army is the extension of the concept British Soldier; only, since the number of points is infinite, Geometry is unable to imitate the army list by the issue of a space list."[2] These points are self-existent, independently of all other points. A point does not owe its being to the fact that it is related to other points. Its relation to other points is a thing external to it altogether; nay, its relation to other points presupposes that it has being independently of that re-

[1] Poincaré, *op. cit.*, p. 122. [2] Russell, p. 443.

lation. "Its being is simply its being."[1] It is distinguishable from all other points quite apart from its relations to other points; that we do not think so is simply due to the imperfection of our senses and memory—we have as it were a bad memory for faces. Hence absolute position in space is quite determinate.

Space in this sense is not a simply ideal thing, existing in the mind; "both being and existence belong to empty space".[2] Everything has being, as a creation of the imagination or as something else; but not everything has existence.

Thus Mr. Russell seems to hold space to be a sort of squared paper ready prepared, on which to draw diagrams. Each square is a square quite independently (we may say) of all the other squares; and the whole paper *is* independently of anything we may draw on it. Thus things will be in space and move with reference to it in a similar way to the way in which diagrams are drawn on the squared paper. There are two quite separate entities, empty space, in which things are, and in reference to which their position is plotted out, and things, which are in it.

I have already, from general considerations, criticised the attribution of existence to a general scheme of this nature; and shall not at present do more than outline a criticism of the theory itself.

In the first place, the points cannot be given any individuality such as Mr. Russell suggests. They are indefinables, and apart from their relations to other points, must remain indefinables. And in an infinite space, their absolute position cannot be fixed either.

In the second place, if we ask *what* being the points have independently of the relations they bear to the other points, we cannot get any reply.

Lastly, if the relations are external relations, what is the sense of predicating them of the terms?

Mr. Russell's position depends on the philosophical theory he holds along with Mr. G. E. Moore; which holds the "non-existential nature of propositions (except such as assert existence) and their independence of any knowing mind; also the pluralism which regards the world, both that of existents and of entities, as composed of an infinite number of mutually independent entities with relations that are ultimate, and not reducible to adjectives of the terms or of the whole which they compose".[3] I shall not discuss it; Mr. Bradley has done that very fully;[4] it will be enough to account for it.

[1] P. 453. [2] P. 449. [3] Russell, *op. cit.*, Preface, p. vii.
[4] *Appearance and Reality*, pp. 574-582.

This theory is the result of a defect in Green's theory of relations. Reality, according to Green, consists of relations; Green tears all terms into relations. It is true, that when we analyse the terms we find only relations—as when we look at the body we see only the limbs; but an object is something more than mere relations—as the body is more than mere limbs. Take away the relations and you take away the object. Yes, but try to take away *only* the relations. You are taking the terms as well. Try to get the relations without the terms. You cannot. All this only shows that terms-in-relation form a system, a unity in which the relations depend on the terms, the terms on the relation, the terms-in-relation on both, and both on the terms-in-relation.

But suppose we refuse to accept a Hegelian "organic unity" a "triple syllogism". Then if we keep to the dependence of terms on relations there is nothing for it but to resolve the terms wholly into relations. And in the natural course of events the relations themselves are seen to be inadequate; there must be terms between which the relation holds; and these terms, not having any intrinsic connexion with the relation, must exist independently of the relation, and co-eternally with it. Thus the world, which was considered as consisting wholly of relations, comes to be considered as "composed of an infinite number of mutually independent entities, with relations that are ultimate, and not reducible to adjectives of their terms or of the whole which they compose". Or the position may be reached directly, by way of revolt. If we make the terms dependent at all on the relations we cannot prevent them being swamped in the relations. The only way of preserving the terms is to adhere strictly to their independence. Hence we have terms, on the one hand, and relations independent of the terms, on the other.

The whole problem is a result of the attempt to get the ultimate meaning of "terms-in-relation" by simple analysis, without any further process. A whole is *not* simply its parts; there is very much more in it than this, and it is this more which a simple analysis misses.

I hinted at a deep contradiction involved in the conception of absolute motion as used by Mr. Russell. I have now to attempt to show what it is.

Mr. Russell's theory bears traces of a materialistic view of space. Newton's view was frankly materialistic. Space reacted in some way with matter. And there have been many similar views of space put forward. The most original in

this way is Clifford's imaginative theory of various spaces. I give it chiefly as illustrating an extreme form (logically) of the theory of absolute space. Starting with Clerk Maxwell's pronouncement[1] that "Any one who will try to imagine the state of a mind conscious of knowing the absolute position of a point will ever after be content with our relative knowledge," Clifford goes on to consider the possibility of absolute position in space, and of finite spaces of various dimensions. As typical of a one-dimensional space he takes the case of a worm in a tube; the space will be considered homogeneous if the tube be in the form of a circle, and infinite if there is no mark on the tube which the worm can recognise. If there is such a mark, the space will be recognised as finite, and absolute position can be fixed. If the tube be pear-shaped, the absolute position can be fixed by the amount of bending experienced by the worm. Here we have a finite space in which absolute position is recognised. Clifford however remarks that the physical bending of the worm would probably be attributed to other causes than the bending of space; in that case, space would be homogeneous and infinite, and there would again be merely relative position.

The case of two dimensions is considered analogously. When we come to our own space we have several possibilities, formulated by Clifford as follows:—

(i.) Our space may have a curvature varying from point to point. Absolute position in space would then be conceivable.

(ii.) Space curvature may be constant throughout space, but may vary with time.

(iii.) Our space may have nearly uniform curvature, slight variations occurring from point to point, and also with time. These variations might produce physical effects, analogous to the bending of the worm. We might even go so far, Clifford thinks, as to assign to this variation in the curvature of space, "what really happens in the phenomenon which we term the motion of matter". And Karl Pearson suggests in a note, that the phenomena which might thus be explained are those of light, heat and electro-magnetism. "It is a question," he says, "whether the physicists might not find it simpler to assume that space is capable of a varying curvature, and of a resistance to that variation, than to suppose the existence of a subtle medium pervading an invariable homaloidal space."[2]

[1] Clifford, *Common Sense of the Exact Sciences*, p. 215.
[2] *Ibid.*, p. 226, note.

In reality, Clifford is not considering various spaces at all. He is considering the action of various constraining bodies. The corresponding analogy in the three-dimensional space is of a three-dimensional world constrained by three other three-dimensional worlds, one on each side. Or rather, there is no real analogy at all. In reality, we are using three-dimensional matter all the time. The moment we seriously attempt to conceive of anything else, we fail. So long as we are working with a flat fish confined between two surfaces or with a tube—*i.e.*, with three dimensions—we can understand what we are doing; but then if we imagine the constraining *matter* to be taken away and try to think of a two-dimensional fish in a two-dimensional space as anything more than ideal, we find ourselves unable to do so.

That space should be considered to have a constraining action on bodies, even to be capable of explaining physical phenomena, by men such as Clifford and Pearson, is due to their education in Newtonian ideas. Newton's first law of motion is indeed stated in such a way as to render such interaction necessary; and such interaction is a logical outcome of Mr. Russell's absolute theory. For otherwise, why should it be necessary to find the motion of a body with reference to absolute space, as Mr. Russell considers it to be?

The difficulty raised by Newton's law was a very real one in the time when Clifford wrote; and it is only being made more remote by the work of modern physicists. If the theory expounded by Prof. J. J. Thomson, explaining matter in terms of electricity, and thus connecting matter definitely with the ether, should prove to be well founded (and it may be said to be so already) then the difficulty disappears. For then what we have in the First Law is not the motion of matter with respect to absolute space, but with respect to the ether. Whatever the ether is, it is a scientific hypothesis, which is sufficient to warrant its use in this question, philosophically. And if matter is a "centre of strain" or a "discontinuity" in the ether, then to say that "Every body continues in its state of rest or of uniform motion in a straight line (relatively to the ether) except in so far as it is compelled," etc., is to lay down a proposition which, though certainly ideal—for the case could not be realised—is not necessarily unexplainable. For there is a real connexion suggested between the state of motion relatively to the ether and its change of state, which may be significant if matter is fundamentally ether, but which cannot be if there is no possibility of interaction between matter and ether.

And if for "ether" we substitute "absolute space," we must consider absolute space as interacting with matter.

Thus from the argument regarding absolute motion in space, we see that if we are to hold seriously to absolute space, and if it is to be of any value to us, we must consider it as in some way interacting with the matter in it. And then we are fairly on our way to a materialistic view of space, such as that of Clifford. This result—that if we hold to the existence of pure empty space independently of matter. we are compelled to attribute to it the property of interacting with matter, and so make it contradict itself—shows that as empty space it is a mere abstraction. Thus from this side we have the same result as before

III.—THE PRINCIPLE OF CAUSALITY IN ITALIAN SCIENTIFIC PHILOSOPHY.[1]

By Angelo Crespi.

I.

The following considerations have been suggested by several assertions we have seen concerning Herbert Spencer's place in the history of the genesis of a scientific interpretation of the world. Thoroughly conscious that the importance for that interpretation of the English psychology of the eighteenth and nineteenth centuries cannot be exaggerated, we endeavour to show that Spencer's solution of the problem of causality and of the uniformity of natural laws not only does not bear the weight of a severe criticism, but represents a step backwards in regard to the method followed by the traditional tendency which had its chief interpreters in David Hume and John Stuart Mill. Moreover, we think that those authors failed to reach the true solution, not because of any insufficiency inherent in their rigidly experimental method excluding every *apriorism*, but solely because of insufficient application of the method itself, and of an insufficiently deep analysis; so that, implicitly, we assume that the objective value of the principle of causality can be shown by experience to be inherent in the real in itself, and not to be the mere result of rational deductions or of inductive reasonings. This assertion indeed constitutes one of the most peculiar marks of the present Italian scientific philosophy, the most authoritative apostle of which, Robert Ardigò, Professor of the History of Philosophy in the Royal University of Padua, really deserves, according to many whose opinion is of weight, to be considered as a powerful and respectable competitor to Herbert Spencer. And this

[1] Since this article was written, a long time ago, some alterations happened in the writer's degree of adhesion to the chief points of Prof. Ardigò's philosophy; but the article has been left untouched because, after all, the historical significance of the theory of causality developed through it remains, and though in need of further developments and of some substantial change, its fruit-bearing character remains as well.—The Author.

not only because of his wide systematic views concerning every class of phenomena, but especially because of the deep originality of his principles; so that Ardigò appears at the same time as the only thinker wholly true to the empiric method who, notwithstanding, has a rational cosmology, and as the only thinker who has the clear idea of the naturalness of every bond between phenomena.

Every cosmological conception is invariably conditioned by the conception a thinker has about the value of human understanding. That is one of the clearest lessons from the history of philosophy.

Therefore, let us shortly recall the terms of the question and those of his solution.

It is well known that, according to David Hume's theory, from which that of John Stuart Mill does not substantially differ, our knowledge is essentially nothing else than a classification of sensitive perceptions according to their relations of likeness and unlikeness, of co-existence and succession. The processus of this classification is that of Association. Our knowledge, in consequence, being only a co-ordination of subjective perceptions, we are not warranted in dogmatising about objective existence, and every "necessary" belief is based only upon custom. The mind fails to detect any nexus whatever between phenomena. Starting with this conception of our knowledge, the only possible view of the world consistent with it, was that of an aggregate of facts existing by no inherent necessity and resting upon the arbitrary. Spencer's position is less far from this point of view than might at first be supposed.

Indeed in the *First Principles*, as well as in the *Principles of Psychology*, or in the 660th section of the *Principles of Sociology*, he expresses the quite clear conviction that the *nexus* between the different phenomena, however certain, belongs to the sphere of the Unknowable. So that in the last analysis we remain with a sceptical conclusion. It is true that, following Hamilton, he tried to show the uniformity of nature and the law of causation to be a mental necessity, an aspect of the persistence of force, that is to say, a corollary of our being unable to conceive a fact as issuing from or as passing into nothingness. But it seems to us that this solution is not tenable. Historically, the asserted "inability to conceive" is in contradiction with many beliefs in which a total or a partial misknowledge of causality was implicit; and in any case, this principle is only a final conclusion, never a starting-point; it may express the supreme generalisation of science, not in the least its support and foundation. This point of

view leaves quite unanswered the chief problem: What is the objective range of the idea of cause? What is the ultimate reason of our belief in the principle of causality? It appears clearly at first that if we never detect any nexus between facts, no succession of facts, however often repeated through millions of animal and human generations, could in the least suggest the idea of such a nexus. Why do we project our volitional experience as causative beings in certain cases and not in others, or, to speak more exactly, why in many cases do we not desist from projecting this experience into external changes and in many others cease doing so? It seems to us that only Ardigò's epistemology answers quite satisfactorily all these problems, or, at least, contains the secret of the answer, and only upon his answer to these points can a rational cosmology be legitimately built. We shall shortly summarise his guiding gnoseological ideas, chiefly contained in *Empirismo e Scienza*, in *Il Vero*, in *La formazione naturale nel fatto del Sistema Solare*, and in two works concerning the *Unknowable* of Herbert Spencer and the *Noumenon* of Kant.

II.

Just as the observation of the fact of light is sufficient to authorise us to affirm as absolutely real the existence of light, so the observation of any psychical fact is sufficient for the affirmation of such a fact as absolutely real; that is to say, as a *datum* not at all relative to any other reality, and not in the least suggesting the thought of any reality beyond that which constitutes its own being, not even that of the Self or of the Not-Self. So that, quite rightly, Condillac asserted that, on the hypothesis that a marble statue could suddenly become conscious of the perfume of a rose, the consciousness of that statue would only be constituted by the sensation of that perfume, not in the least referred to any subject or object. Prof. Ardigò expresses this by saying that every element of our experience and our experience itself as a whole, is not in the least relative, but, on the contrary, is absolutely true, and that the relativity only concerns the further differentiated parts of our experience, just as, *e.g.*, a circumference is in itself an absolutely real entity, and relativity can be found only between its geometrical elements. Therefore the law of association has, in the Italian philosopher's conception, a quite different reach from that given to it in the traditional English psychology; for such a law is not asked to give us more than it may find in the content of the *data* and in

the relations between these *data*, on which it is working, and, in consequence, not even the causative nexus, if this is not given as a *datum* of experience. If we are well convinced that every sensation possesses in itself an absolute truth, that truth, because of which it is that especial fact and not another, or the image of any other; that is to say, if we are well convinced that every sensation in itself is a bit of absolute reality, having a value, because of this very fact of its existence, quite preceding and superior to any other value, which it will get afterwards, as entering into relations with other *data* or groups of *data*, we shall very easily understand that through the different ways of association we do not create any truth or constitutive principle of our understanding, but only discover those truths and those laws of the reality which are given in the elementary *data* or in those groups of these data which are, as such, given by immediate experience. Before approaching more intimately our especial question, it will be well to elucidate this point. Just as the anvil and the hammer are made of the same matter and only differ because of their mutual relations, so the Self and the Not-Self differ only because of the new mutual relations between the same elements of which both are constituted. The same perception, indeed, according to the different cases, may appear as belonging to the subject or to the object. But, just because every elementary datum is a real in itself not yet classified as belonging to any subjective or objective world, and as this reality is presupposed in every further classification according to Prof. Ardigò's views, we are not at all authorised in saying, as subjective idealism does, that subjective reality, the psychological world, has in itself a more immediate and deeper reality than the objective world, which has only a derived and symbolical value.

Indeed, this assertion forgets that the classification of a perception or of any representation, as a part of the psychological world, is only possible after the differentiation of experience in the two aspects of the Self and of the Not-Self, that is to say, that that perception is not in itself a psychical or physical phenomenon, but comes to belong to one of these classes only through its being distinguished by us as such, after that differentiation. Therefore the reality of the subjective and objective world is exactly of the same degree; both are two branches from the same stem, two sides of the same processus of polarisation of the experience as a whole. The real is not conceived through the subject, but it is given in the subject as well as in the object, or, more exactly, being given in itself, it gives its own reality to make the second-

hand reality of the Self and of the Not-Self through a correlative processus of differentiation.

So that the reason of the affirmation of the reality of the subjective and of the objective world, is nothing else but the reality of their elements, their existence as a last datum of experience, imposing itself quite independently of every other reality with which, only afterwards, relations may arise. The new derived realities are only a continuation of the formerly given reality of the pure undifferentiated experience, which, in being differentiated did not in the least degree imply disruption. The fact itself of the correlation between the subjective and the objective world means that both are radically joined by the identical nature of their unities.

If we have fully grasped this fact that the differentiation of the experience, which is the development of the real, does not split and destroy the primordial unity of the real itself, which still is underlying both Self and Not-Self as their constitutive elements, just as the differentiation of the primordial nebula in the several elements of the actual solar system did not break and suppress their fundamental unity which still remains, we shall be enabled to discern the absurdity of the problem of casuality in its traditional form. The absurdity lies in the proposal to discover what value the merely subjective principle of casuality may have for the interpretation of an external world supposed to be quite inaccessible to us in the unity of its being. And at the same time we shall be warranted in attributing to it an absolute value, whether in the subjective or in the objective sphere, if we shall find the causative nexus in those *data* of experience, which constitute the common root of both subject and object.

III.

Why does every ordinary man believe that the elevation of the eyelids is the cause of the visual sensation? Only because of this: that the experience gives to him both as one fact, the unity of which as a whole is to him empirically certain. This becomes plain when we consider that another man, *e.g.*, a physiologist, detects several moments in the same fact of vision, wherein the ignorant discern only two moments, and what is the progress of science but a continuous discovery of many facts where formerly only one was perceived? These remarks lead us to acknowledge another deficiency of English doctrines of causality. They apply association to explain the belief in necessary causative nexus, but they consider the *fact-cause* and the *fact-effect* as being

connected through association, though in themselves they are without discernible connexion. The truth is just the contrary. It is not through association that they are connected; *they are given us already connected in observation.* The point missed by the English psychologists was just this, that, although through abstraction we can separate the several moments of a causal process, yet it is only when they appear as moments of one fact, like points of one continuous line, that we are compelled to believe in the existence of a causal nexus. Many examples may be adduced to explain and justify our assertion of continuity between the several moments of one fact. When any one is making microscopical researches, he begins by examining his object under a low magnifying power. In this way he gets the knowledge or the representation of that object as a whole. When afterwards he looks at the same object under a greater magnifying power, he discovers several details; but his understanding of these details is only possible through the prior representation of the object as a whole. This representation plays, so to say, the *rôle* of a background in a painting, and makes visible the unity of apperception, whereby every detail is apprehended as connected with the others and as a constitutive element of the one object. The same happens in the progressive knowledge of a mountain. Ignorant and learned men begin by having the indefinite representation of an immense mass of stones. But little by little one discovers several aspects ignored by the others, one sees distinctly where others still see indistinctly; but for him also the new discernments have a meaning only through the place they take as referred to the previous indistinct representation of the mountain as a whole, which is the reason of our persistent belief in the connexion of the discovered details. They are still thought as belonging to that mountain, and in certain mutual relations, because we discerned them within the whole of that mountain and subject to those relations. Knowledge is always passing from the indistinct to the distinct, the connexions of the distinct parts being explained by the persistent unity of the underlying indistinct. It is the same with regard to the causal nexus. No fact or thing is so simple that it cannot be conceived or shown to be the result of smaller elements, and no fact or thing is so constituted that it cannot be conceived or shown to be part of an including system. Therefore if one fact is carefully studied and several moments are distinctly perceived in its development, the connexion between these several moments will be given by the representation of the

fact as a whole, within which they have been apperceived; and, again and for ever, as every one of these moments can be found to be the succession of several smaller fractions of time, so the representation of each moment as a whole will again be cause of the affirmed existing connexion between the several smaller phases of its becoming. And the opposite process also takes place. Several facts hitherto quite disconnected cannot but be thought as in necessary causal connexion, when given by experience as moments of an unexpected continuous line. The mistake of the English psychologists in their theory of causality has been that of considering only the distinct points of the lines and of neglecting the continuity between them, continuity which is not less real because of its being indistinct. They acted like a hypothetical geologist who should regard each of the several beds he discovered in a sedimentary deposit in complete isolation from the rest. The representation of the deposit as a real whole is just the reason because of which every geologist, although continually distinguishing new moments in its history, considers the successive layers as constitutive parts of it. And why? Only because their subordinate reality is by experience given him together with a greater and including reality. The latter is not less real than the former, and, again, between one stratum and another and within each one, there are many quite ignored phases; but they are included in the whole; its indistinct reality fills the emptiness of the distinct knowledge. Far from seeing every thing or fact as always disconnected, we always see everything as a part of something else and including something else.

IV.

Therefore causation is inherent in experience to the real in itself, independently of its further differentiation in Self and in Not-Self. What wonder that causal relations may be found in these two derived sides of the same real and between them also! Indeed the differentiation left quite untouched the absolute reality of their elements. So to say through that differentiation, the causality itself appeared here as subjective and there as objective; but in both the reasons of its being affirmed were the same. So long as we fail to see that the Self and the Not-Self, the internal and the external world are nothing else than differentiations of the same real, the problem of their mutual relations is bound to appear as for ever insoluble. But for those who succeed in seeing that both are included in an absolutely given and

indifferentiated psycho-physical reality, the continuity of which is still underlying them, the problem of their causation is quite like any other: not harder, not easier. Just as the representation of the fact of sight, as a whole, gives the connexion between the several causative moments successively discovered within it by science, in the same way the representation of the real in itself, independently of every further elaborated differentiation, gives us, in its unity and sameness, the connexion of the two derived worlds of the subject and of the object. To explain is nothing but to find and recognise the indistinct unity of which the fact to be explained is an element. Experience gives the real in its unity; analysis distinguishes and distinctly catches the several sides of the real; the task of philosophy is the same task of understanding, that is to say, the reconstitution of the total representation of the real as one whole through a process of recognition of every distinct as a part of an including indistinct, up to that indistinct which, in every stage of the knowledge, is such because in that stage it could not be further distinguished, and which is the supreme general scheme justifying the affirmed unity of all the subordinate distincts. Just as every further distinction of points in a continuous line never suppresses the continuity of the line between the several points and the possibility of further distinctions, so that the continuity of the line gives the explanation of the relation between those points, so every further distinction in the knowledge of every phenomenon or of the universe as a whole, will never suppress the continuity of the indistinct part between phenomena, which is the reason of their unity, whether the reference be to the infinitely great or to the infinitely small. In this way the world is no more, as in Hume, John Stuart Mill and, implicitly, in Spencer's doctrines, a mere collection of fact, only joined by the mental process of association, but appears as one fact, nay, as *the* only real fact, of which we distinctly catch only several moments following each other in that general form of sequence we recognise as causality. In this way once more epistemology is shown to be in intimate connexion with cosmology; no induction from millions and millions of experiences of human and animal generations, no deduction from any so-called ultimate postulate of thought, is wanted in such a cosmology as a condition of its possibility; the fact is sufficient. For a cosmology reaching the point of its ideal perfection, the only possible task would be that of giving a representation of the real in which the greatest variety of the world considered from a dynamic point of

view would look identical with its deepest sameness, from a static one; *viz.*, its task would be that of representing the unity of Being. The uniformity of natural laws, instead of being a mysterious instinct or a deductive corollary, would only be the expression of the unfailing and everlasting identity of the real with itself, of the real, which cannot be unreal. This, shortly, is the philosophy of causality in Prof. Ardigò's epistemological and cosmological conception, and it seems to us to be a great step towards the traditional aim of English experimental philosophy, the exclusion of the *apriori* from the science of human knowledge. As we said in the first paragraph of this essay, it may be clearly seen that, while one spirit and one method, although applied with different degrees of exactness and depth, inspires the doctrines of David Hume, John Stuart Mill, and Robert Ardigò, that is to say, the rigid *aposteriorism*, there is on the contrary a profound difference between the Italian thinker and Herbert Spencer, with regard to method as well as with regard to results, which in the latter are undoubtedly sceptical, if we consider his own last views concerning the value of his doctrine of the Unknowable. If we consider that Prof. Ardigò is the only Italian thinker who now has a real systematic body of doctrines and that his theory of *Natural Formation* is the only work which aims at the same goal as the *First Principles* of Spencer, though with deeper penetration, the hope that his philosophy may become the object of some consideration in England will not be judged as a temerarious one, especially if we shall add that he is at the same time the most authoritative interpreter of that innate tendency of the Latin spirit, which gave to the world the genial naturalistic intuitions of Giordano Bruno and the experimentalism of Galileo.

IV.—JUDGMENT AND APPREHENSION.

By Helen Wodehouse.

In the following pages I wish to set forth such arguments as most appeal to me in support of the thesis that judgment and apprehension are identical, and to examine certain arguments which have been advanced by high authority on the other side.

Those who have opposed the current division between judgment and apprehension have usually done so by means of levelling up. They have protested that the activity of thought is everywhere, that the lowest step and the most elementary element in knowledge must still be classed as judgment. This line of argument, though a good one, might be usefully supplemented by the opposite plan of apparently levelling down. The division, it may be urged, disappears so soon as we remove from judgment the shadow of a mysteriousness and complication which it really does not possess. We may try to show, not that apprehension is itself judgment, but that *judgment itself is no more than apprehension.*

Take a simple case. Suppose six dots on a piece of paper, : : :, to be placed before the eyes of an intelligent man. He sees them in the full sense; sees into them, sees many of their relations, though very likely he puts nothing into words. Invited to speak, he says, "Very well, there are six dots, or two groups of three, or three groups of two; what next?"

Now at what point in this process did judgment supervene upon simple apprehension? Not, surely, just where the perception of number and relation came in, for to say this would be to make apprehension merely another name for sensation. Not, surely, just at the higher point where *words* are first used, for to say this would be to deny all judgment to an animal, and to attribute it in an altogether disproportionate excess to people who use verbal imagery as opposed to those who chiefly use other kinds. Is not the process homogeneous all along? a gradually developing cognition which may, if we like, be called judgment from the beginning,

but which may equally well be called apprehension up to the end?

But here the most important advocates of a division will reply, "In this special case judgment and apprehension were present side by side throughout. For *belief* in the reality of the thing apprehended was always present. Judgment exists wherever this belief exists; where there is not belief we have apprehension alone." The answer to this is, (1) that there are various universes of reality, (2) that, this being granted, belief in the reality of what is apprehended is indistinguishable from the apprehension itself. The *cognitive* process is precisely the same whatever universe is in question, whether it be one of those roughly classed as "actual," or whether it be one of those roughly classed as "imaginary".

Let us take a transitional case, where, instead of having six dots made for him on the paper by somebody else, the man makes them for himself and then looks at them. Here an act of creation by himself has preceded the cognition, but the cognition itself is precisely the same as in the first case. Next let us alter the universe a little; let the man not make the dots with pen and ink, but image them. An act of creation has again preceded the cognising, but he has created a different kind of reality. On the other hand, I maintain that the cognition itself is, in every relevant way, unaltered. He apprehends the imaged dots exactly as he apprehended those which he made on paper. It is no addition to say that he believes in them, or apprehends them as real. They have a different sort of reality; he sees them to be images and not marks on an actual paper, but they are real images. There is nothing here to make us say that when he used ink there was belief and therefore judgment, but that without ink there is only apprehension.

Let us take one more step. Nothing relevant is altered when the object has a sort of reality which is not adequately presented in sense or in sense-imagery. Let the man contemplate and examine the relation of 3 and 6 in general, or of 3003 and 617 in general. Let him follow a discourse on art "with an assenting mind". Let him contemplate his own character or a friend's, or a person's in fiction, created either by himself or another. Everywhere he is apprehending a thing, and it is no addition to this to say that he apprehends it as real, with its own special sort of reality. The objects are real number-relations, real laws of æsthetics, real personages in a book. The reality in some cases is due to acts of creation by himself, but the cognition of what is created is just as submissive, just as objective, just as believing in every case.

Our position is, then, that if judgment exists in any case of apprehension it exists everywhere. Or, to keep to our plan of apparent levelling-down, we will say that, since judgment means apprehension *plus* belief, and since apprehension without belief is as inconceivable as sight without seeing, therefore all judgment is simply apprehension. "I apprehend that . . ." is used in ordinary language in exactly the same sense as "I judge that . . . "; and the typical expression of assent is " Yes, I see ".

It may, however, be said that the kind of reality we call actualness is so important that the apprehension of an actual thing as actual ought to receive a different name from any other sort of apprehension. It is judgment if you say "I upset the milk"; it is not judgment to say " The March Hare had upset the milk". I can only say that I see no reason for altering the name. The cognitive process in the two cases seems to be precisely the same, even for Lewis Carroll himself. Lewis Carroll in each case will be contemplating a creation of his own. They are creations in different worlds, which he will not confuse; he will see each as possessing its own special sort of reality. And no doubt he has rather a freer hand in creating in one of the worlds; he could do no more than pick up his own milk-jug, whereas if he chose to alter the story he could make the March Hare's to have never been upset at all. Yet so long as he does not make this change his judgment must be just as submissive in the one world as in the other; the fact of the overturned cup is as solid as any other fact, and bears as hard on all action in its own world — nobody must treat that jug as upright and full. The cognition is in every relevant way the same as cognition of a creation in the "actual" world. If that is the apprehension which is one with judgment, so is this too.

One final objection may be brought; it may be said that the *discrimination* of different universes of reality is so special and important a process that it ought to receive the special name of judgment as distinct from the ordinary apprehension. I should reply that this is possible but rather dangerous, because it suggests that the process of presentation here is different from the ordinary. I urge that this process is exactly the same, whether I am cognising a broken cup as existing in my drawing-room, in Queen Anne's drawing-room, or in Wonderland, or whether I am cognising it as broken in two and not in three.

I will now examine a few features in one of the most careful and important attempts to divide judgment from appre-

hension, that of Dr. Stout. Let us take first the treatment in *Analytic Psychology*, vol. i., pp. 99-114 (2nd edition). Dr. Stout bases his position on that of Brentano, but he gives so full and accurate an account of Brentano's arguments that I feel justified in saving trouble by confining my references to the English book. The main test cases proposed (p. 100) are "(1) The state of doubt or suspense of judgment; (2) The play of fancy or 'make-believe'; (3) Æsthetic contemplation without make-believe or with a minimum of make-believe".

(1) In doubt, according to the author (p. 103) "judgment is present in a most defective, and, so to speak, attenuated form, whereas the thought which it presupposes may be quite clear and definite. There need be no vagueness or indeterminateness in the simple apprehension of the alternatives."—According to my own account, this clear part is the apprehension, or the judgment, that "A must be x or y". This is solid and distinct, whereas the tendency to improve and refine it may be weak, and the secondary apprehensions or judgments "one *or* the other, not both" and "evidence for x is this, for y that," may be so feeble that they create hardly any disturbance at all. The case is not one of a strong apprehension contrasted with a weak judgment, but of a strong apprehension-or-judgment contrasted with weak ones.

(2) In make-believe, Dr. Stout says, "the absence of disbelief seems . . . to depend on the voluntary exclusion of the question of truth or falsehood. . . . The moment that the question of whether or not the things we are thinking of exist is in any way brought before our minds, we unhesitatingly deny their existence." Yet "our idea of these feigned existences may be in the highest degree vivid and distinct". Therefore we have here a case of clear apprehension without belief, or with a minimum of belief; and therefore with a minimum of judgment.

It seems to me that this objection disappears so soon as we distinguish universes of reality, and so soon as we refuse to attribute any exaggerated importance *for cognition* to that universe which we call "actual". The phrase "to believe in" is no doubt most often used within the "actual" universe, and Dr. Stout seems to take it as properly confined to that universe, and extended to a work of imagination only so far as illusion, which is confusion of universes, comes in (p. 104). In my view the process of cognition is so exactly the same in all universes that it would be very awkward to attach importance to such a limitation. Take

belief rather to indicate essentially the *submissiveness* of all apprehension; the phrase "make-believe" is then quite accurate and quite independent of illusion. For our apprehension must submit not only to what is found but to what is deliberately created, by ourselves or by others and by hands or by head. In all these cases the submission is the same, and the apprehension, the belief, and the judgment are the same. We cognise the Mad Tea-party, then, just as we cognise a tea-party in actual life; and there is not the least need for us to confuse the universes in order to give the apprehension that submissiveness which makes it judgment, and without which apprehension could not exist.

(3) In æsthetic contemplation (p. 107) "a person listening to a piece of music, and giving himself wholly up to the enjoyment of it, apprehends the several notes, their time-sequence, and their other relations. But he does not frame judgments, either verbal or purely mental, concerning these matters. He is simply aware of them, and enjoys them. His mental posture is suddenly and strikingly altered if a false note occurs. The mood of æsthetic contemplation for the moment disappears, and he passes a judgment on what he hears."

This is an interesting objection from my point of view, because it is more readily met by levelling down than by levelling up. It would involve unusual language, though true psychology (according to me), to claim that the perception of the notes and their relations was already judgment. But just the same thing may be expressed in a more ordinary-sounding way if we claim that what is occasioned by the discord is still simply apprehension. The listener apprehends the notes as sounds in relation, as before; he now apprehends them also as bad sounds in discordant relation. Why is this to be given a new name? why is this judgment if the other was not? The man may not even use any words; but if he does, are words so important as to make all this difference? It is surely legal and not logical associations which lead common language to introduce just here the phrase "to pass judgment".

Dr. Stout next adds some special arguments taken from Brentano:—

(1) (p. 107) "There is no contrast between mere ideas as such, except in so far as their objects are contrasted. The antithesis of desire and aversion is of a different nature. It neither is, nor implies, a contrariety in the mode in which consciousness may refer to one and the same object. Now

the opposition of assertion and denial is in this respect entirely analogous to that of desire and aversion."—For me, the opposition of assertion and denial means the opposition of apprehension-of-presence in the abstract to apprehension-of-absence in the abstract; which is no doubt similar to the opposition of abstract desire and abstract aversion. Special apprehensions need not contrast or conflict any more than special impulses (whether desires or aversions) need do so.

(2) (p. 109) "In ideas there is no intensity except that which belongs to the presented content of consciousness. The reference to a subject has no intensive gradations." But "assurance or conviction certainly admits of degrees". There is an "essential difference between the quantitative gradation in firmness or fixity, which is proper to belief, and the quantitative gradation in vehemence or vividness, which belongs to presentation".—Certainly, every apprehension has many qualities, and the stability of its content depends very little on that content's vividness; or, as Dr. Stout points out (110, 111), on its third quality of definiteness and distinctness.

(3) (p. 111) "Brentano points out that mere ideas cannot strictly speaking be right or wrong. . . . Within the sphere of desire . . . it is otherwise. Here we find a distinction between the morally good and the morally bad. Similarly, in the case of belief there is a corresponding distinction between truth and error."—Dr. Stout quotes this argument without making himself responsible for it, and I am inclined to think that the facts concerned will fit in more readily with my view than with Brentano's. For in the sphere of desire there can be no distinction of good and bad until concrete details are given. Until you state time, place, person, motive, and circumstances, "the desire to go to London" can be called neither right nor wrong. The case of apprehension (or judgment) is exactly the same. "To apprehend family life" is an abstraction on which no verdict can be passed. The apprehension of family life as being an interesting subject for discussion, or as normally involving father, mother, and children, is true. The apprehension of it as essentially an affair of contract, or as existing in Plato's Republic, is false.

"In conclusion," says Dr. Stout, "we may say that the difference between believing and having an idea coincides with the difference between the question, Do you *understand* this proposition? and the question, Do you *assent* to this proposition?"—This is the difference between apprehending a

statement as *intelligible* and apprehending it as *correct*.[1] In each case we are making a judgment about the statement; we have that apprehension of it which implies a belief.

Let us turn now to Dr. Stout's later statement of his position, in *The Groundwork of Psychology*, p. 19 and onwards.

(*a*) "It is one thing to apprehend the meaning of a proposition and another to believe, disbelieve, doubt, or question it." The first four of these have already been dealt with. Questioning will fall partly under the same description as doubt; the apprehension "A is *x* or *y*" urged to further refinement by the apprehension "it is *x or y*". The remaining part will be, I think, what Dr. Bosanquet calls it; not a special kind of cognition but an imperative; "tell me which it is".

(*β*) "To think of a thing is not the same as affirming or denying its existence."—No, for these are only two of the many aspects in which it may be thought of. This is illustrated by an example given presently; "the bare thought of being hissed may affect an actor disagreeably and the mere idea of a comic situation may excite laughter". A situation, that is, may be apprehended specially as being in actual existence, or it may be apprehended as being comic, or else simply as being "thus and so," as containing such and such a detail, and the laughter may follow immediately.

(*γ*) "Suppose that a man is absorbed in the enjoyment of the beauty of a picture. He is aware of the picture as really existing, and so far his mental attitude is one of judgment or belief. But this unformulated judgment is in the background of consciousness. It has nothing to do with the man's enjoyment. His interest is not in the real existence of the picture but in the mere presentation of Reality. If it threatens to fall and he stretches out his hand to save it, there is a transition from interest in what is simply apprehended to interest in real existence. A similar change of attitude takes place if he passes from purely æsthetic contemplation to the business of purchasing the picture." This is a curious and difficult argument, and offers several different points for comment. 1. I should of course agree that to be aware of the picture as "really existing" was itself a belief or judgment. To be aware of some other picture as "not really existing" would be unbelief, which again is judgment. There are many other alternatives: I may be aware of it as existing in the past, in the future, in a dream, on a condition, in somebody else's novel, in my own novel. All

[1] Or, if you like, between apprehending the content *as stated* and apprehending it *as being fact*.

these will be cases of judgment, though for my purpose in this article it is more convenient to call them simply awareness-of-existence. 2. Such awareness of existence is present in all apprehension. We are aware of existence even when we do not specify the object's particular kind of reality—the context or universe in which it exists. 3. This apprehension of the external context, as we might call it, seems to be of just the same nature as the apprehension of "internal context". We cognised the six dots of our first illustration as placed on an actual paper or on a remembered paper or on an imaged paper or an imaginary paper; we also cognised them as being six and as being arranged in a rectangular figure. There seems no great reason for distinguishing the first set, under the name of judgment, from the second under the name of apprehension. When Dr. Stout says that the spectator's interest "is not in the real existence of the picture but in the mere presentation of Reality," I should express the same thing by saying that the interesting and prominent part of the presentation before him consisted not in the external context of the picture but in its internal detail.

4. When the picture threatens to fall, the spectator's submissive cognition is interrupted by an *impulse to alter* what is cognised. Now the means of altering a presented thing must be largely conditioned by the kind of universe in which the thing exists—a universe of actuality, of memory or expectation, of fiction, or whatever it is. Hence the apprehension of "external context" is likely to become more prominent than before. Fresh interest attaches to the cognition of the special kind of reality possessed by the object before us. But I am unable to see that this cognition is of a different kind from the cognition of the other aspects which interested us. The two seem equally worthy to be called judgment, and equally well called apprehension.

(δ) The next illustration is from "the play of fancy," and in essentials I have already dealt with it. My claims would be (i.) that when we create a fictitious situation we have just the same conjunction of creation and cognition as when we shape a model out of actual clay, or arrange six dots on an actual piece of paper; (ii.) that to apprehend any of these is necessarily to apprehend them as existing, though not necessarily to cognise the special nature of their existence; (iii.) that the cognition of this special nature, when it does occur, is of just the same sort as the cognition of any other aspect of the object, and is best described by the same name.

(ε) Lastly, "an illustration of a different sort may be drawn

from the use of words in speaking, reading, writing, and silent thinking. The words as printed or written characters or as articulated sounds are somehow present to our consciousness. But we are not usually forming judgments about them. So far as we judge, we judge concerning that which the words signify. As articulate sounds, or as printed or written characters, the words are in the main objects of simple apprehension merely." The words here seem to be subordinate though necessary details in a whole of presentation. We apprehend them in dim consciousness; in clearer consciousness we apprehend their meaning. This meaning we cognise as "being thus and so," and may or may not cognise it also as true, striking, or beautiful. Nowhere does judgment enter in any sense in which it is different from simple apprehension.

I have not been oblivious of Dr. Stout's use of his division to explain error, in his admirable article in MIND for January, 1908. It would, however, be of little use to attempt to discuss this until the doctrine has been further developed in the other articles he promises.

To sum up:—It appears that all kinds of the process which is called presentation in one aspect and cognition in the other are of the same nature, and had better receive the same name. They may, if we wish, be all called judgment, but it is more convenient and more in accordance with ordinary language to call them all apprehension. All (except possibly the extremely rudimentary form) involve some discrimination of features in the presentation-continuum. All involve cognition of the thing as existent, though the special nature of that existence need not always be specified. If the name of judgment is to be kept for one special process, it will certainly, I think, be best to keep it for the element of discrimination of the different *kinds* of reality. But this discrimination seems to be so much the same process as other kinds of discrimination that I greatly prefer not to give it a special name. With regard to Dr. Stout in particular, I find a difficulty in deciding whether or not just this is the distinction he wishes to make. Some of his examples are appropriate to it, but some seem to suggest a rather different line.

The best of giving up the traditional division is that so many traditional logical difficulties disappear with it. We have made this part of the mystery of judgment for ourselves. "Seeing is believing," when we remember that sight is not restricted to the eye of sense, and that the actual universe is not our only landscape. Reality presents itself to us on every hand, and to judge is simply to allow ourselves to see.

V.—DISCUSSIONS.

"THE AMBIGUITY OF PRAGMATISM."

Mr. Bradley's struggles to show that pragmatism is mere folly continue to give opportunities for further explanations, and it matters little whether he personally continues, as he says, to find them unattractive reading. By degrees it will perhaps become clear, at least to others, that the question whether "theory has any value except of a borrowed kind" is a sham question if it be interpreted as already containing its own answer. The metaphor about *borrowing* its value from practice appears to imply that theory would still be theory if it declined the loan; which is one of the main questions at issue. Since the pragmatist maintains that a so-called theory may be mere verbiage, and that the question whether it is so or not depends on its having a practical meaning, what is the good of asking him to assume that anything called a theory is thereby shown to be *not* mere verbiage but something capable of truth or falsehood? The straightforward question is whether the pragmatist contention about the need of a meaning, and the nature of a meaning, is sound or not. This is the most elementary doctrine of pragmatism, and one cannot help wondering why its opponents go so far out of their way to avoid discussing it. A possible explanation is that the doctrine is too new to suit their habits of thought.

Mr. Bradley tries also to make capital out of the difficulty on pragmatist lines of getting any satisfactory test of truth,—the old difficulty which attaches to all progressive knowledge. Here however he drops into his habit of refuting what has never been said or suggested. If he could have brought forward an instance of a pragmatist having pretended to possess any means of avoiding future surprises due to present lack of omniscience, he would have had some justification. Meanwhile his objection reminds us rather of the Roman Catholic complaints of the dogmatism of science. The pragmatist is as much, and as little, committed to the discovery of a test of truth as the man of science is. If there is any difference between them at all, at least both are alike in their readiness to let new truth supersede the old. And that is where both differ from their opponents. The anti-pragmatist still dreams of an eternal and unassailable truth, while the pragmatist (like the man of science) sees our human need of putting up with truth which has its day and then gets lost in fuller explanations.

But perhaps the acuteness of the controversy is already waning. Mr. Bradley has certainly made, in this article, some remarkable admissions, and if he adheres to them the pragmatists will be more than pleased. Again, it is satisfactory to find (p. 230) that he is at last content to use the name 'scepticism' to express the modern systematic readiness to recognise the uncertainty of our knowledge in contrast to the older use of the word which a few years ago was the only use he would allow. It is satisfactory also to find that he no longer thinks "a blind appeal to theoretical consistency and an uncritical faith in the ultimate validity of some undiscussed Law of Contradiction" a sufficient basis for a metaphysic. If the pragmatists have in any way helped to bring about these improvements, they may feel that their efforts have not been altogether wasted.

ALFRED SIDGWICK.

IS MR. BRADLEY BECOMING A PRAGMATIST?

THIS is evidently a difficult and important question. Its difficulty may be gauged by the fact that Mr. Bradley himself in the last Number twice professes himself unable to answer the question—'Am I a pragmatist?' (pp. 226, 231), its importance by the fact that if he is, the most promising controversy of recent philosophy is threatened with extinction. It obviously, therefore, ought to be discussed.

What is at first less obvious is that it should be discussed by me. From Mr. Bradley himself indeed it is clear that the public has little more to expect. But he makes it pretty plain also that he would prefer to be told where he stands with regard to pragmatism by Professors James and Dewey. The readers of MIND, however, may quite reasonably think otherwise, and recognise my numerous qualifications for this responsible task. (1) For one thing, I have discussed this very question before, most recently in N.S., No. 63 (pp. 401-409), *apropos* of Mr. Bradley's very interesting, but no less obscure, paper on 'Truth and Copying' in N.S., No. 62. A year ago I had reluctantly to come to the conclusion that he fell short of being a pragmatist in certain specified respects. Six of these seemed certain and a seventh doubtful. The doubt as to the last was due to a doubt as to what Mr. Bradley's theory of truth ultimately meant. It had to be left in a trilemma. If it was neither to relapse into a slightly-veiled form of the 'copy-theory' rejected in the same article, nor yet to render truth impossible by definition, *i.e.* to mean neither absolutism nor scepticism, it could mean only pragmatism. And it was duly pointed out that in itself this last was the most reasonable conclusion, if the hypothesis of a radical change in Mr. Bradley's position could be entertained.[1]

(2) I have long been a devoted student of Mr. Bradley's writings and of his psychology, and (3) largely in consequence of this, a zealous advocate of pragmatic methods. (4) In philosophy, as elsewhere, personalities do not always harmonise. Prof. James seems to find discussion with Mr. Bradley as little to his taste as Mr. Bradley does discussion with me. These pathetic discords serve opportunely to remind us how dependent on human idio-

[1] N.S., No. 63, p. 407. In the light of later revelations it is more probable that Mr. Bradley really did mean to adopt the sceptical alternative, but was unwilling to say so plainly.

syncrasies even the austerest philosophy always is. But it would be a pity, on this account, to balk philosophy of the discussion altogether. If Professors James and Dewey should wish also to answer for themselves, all the better.

(5) On the other hand, discussion by me would seem to labour under the disadvantage that any enlightenment it has contributed, and may contribute, is wasted upon Mr. Bradley himself. For we now have it on his own authority (p. 226) that he has long ceased reading anything I write—ever since 1902, to judge by internal evidence.[1] But after all it is chiefly Mr. Bradley's own concern how far he chooses to make his writings irrelevant to the actual state of the discussion, and he rates himself too cheaply, if he thinks that the changes in his position are of interest to himself alone. Controversy, moreover, does not always aim at, and very rarely achieves directly, the actual conversion of the parties to it. It is generally enough if the bystanders should be able to perceive which way the issue goes, and if it goes by default, the object lesson is all the more impressive. Lastly, as regards the objective discussion of a question, it is a positive advantage to feel that the object of one's criticism is no longer taking cognizance of it. It is a pleasing relief to think of Mr. Bradley as an influence like Plato and Aristotle, no longer subject to human frailty and impassive to mere human criticism. One can write so much more freely.

We may begin then by noting that the question of Mr. Bradley's relation to Pragmatism resolves itself strictly into three. (1) Has he always been a pragmatist? (2) Is he a pragmatist now? (3) Is he becoming a pragmatist? The first may be dismissed briefly: to answer in the affirmative seems an excess of paradox. It would render unintelligible the philosophic history of the last ten years. No pragmatist would then ever have dared to differ from Mr. Bradley, or have been revolted by his absolutism. In point of fact no pragmatist has ever ventured to claim him as an ally. The utmost any one has done has been to point out that there were contained in his works certain ideas which, if logically developed, should lead to pragmatism.[2]

The second question is more debatable. Conscientious examination of the case as it stood a year ago showed that although Mr. Bradley had overtly parted company with the Absolute and promulgated a theory of truth of which the most reasonable reading was pragmatic, he could not then be called a pragmatist. But

[1] Any one who took the trouble to compare Mr. Bradley's polemic with the texts impugned must long have suspected this. In N.S., No. 52 (p. 528), I pointed out that Mr. Bradley had not apparently grasped anything beyond the preface of *Humanism*, and made a list of nine gross misconstructions, many of which one regrets to see are still paraded, just as though they had never been repudiated.

[2] *Cf. Studies in Humanism*, pp. 115-118.

since then fresh evidence has come to hand, in the shape of his article on 'Memory and Judgment' and his discussion on Pragmatism, both in N.S., No. 66, and as philosophy just now is almost as progressive as physics, the third question is well worth examining.

We will begin, therefore, by examining Mr. Bradley's article, which not being controversial is less open to suspicion of either over- or under-statement. For in controversy writers often say both more and less than they mean. Nor is it a serious objection to this course that Mr. Bradley has taken pains to assure us that this article was written four or five years ago (p. 153 *n.*). If so, it must have been composed just about the same time as his famous caricature of humanism in N.S., No. 51, in which he professed to be quite unable to see the point of the new doctrines. It is significant, therefore, that he should have withheld it from publication then, and doubly so that he should propound it now.

I.

Critical examination of this article yields evidence both for and against a pragmatic interpretation of Mr. Bradley's new philosophy. Stating the former first, we find (1) that Mr. Bradley is now seriously concerning himself with what is after all the fundamental issue raised by humanism, *viz.* the psychological dependence and psychical context of all logical thinking, and even if he does not yet make quite clear his conception of the relations of logic and psychology, showing himself quite at home in the borderland which joins them. His own argument too is distinctively psychological, and (except where it eddies round the relics of some of his ancient snags) flows smoothly and directly on, in a manner quite unlike the tortuous and tormented course to which 'pure logic' seems condemned.

(2) Mr. Bradley no longer conceals his idiosyncrasy behind the Absolute's portentous mask. He has adopted quite a human and unaffected way of discussing questions. He no longer thinks it incumbent on him to be always speaking for the universe as a whole. He even confesses repeatedly to the 'inconvenience' of never considering anything less than the world at large.[1] 'Experience' is taken in quite a simple and human way.[2] Considerations of applicability, practical wisdom, and convenience are given a hearing.[3] That ambiguous but ambitious humbug, the doctrine that 'what has once been true is always true,' has its power for mischief curtailed by reservations; it is told that it is 'abstract' and incompetent to allay the doubt whether abstract truth is genuine truth at all.[4] In short, the *fiat veritas ruat terra* attitude of pure rationalism is conspicuous by its absence.

(3) On the other hand, the dependence of judgment upon purpose and interest is recognised repeatedly (pp. 165, 166). So explicitly,

[1] Pp. 162, 170, 172, 173. [2] P. 173. [3] Pp. 162, 171. [4] P. 173.

indeed, that one is almost emboldened to ask Mr. Bradley outright whether he would not now consider it logically inconceivable that *any* judgment should come into being without the psychical interest of some person to construct it? But once this is affirmed, the 'independence' of psychology claimed for logic clearly becomes a very queer and difficult thing to maintain. At any rate it is worth pointing out that Mr. Bradley now seems to concede the operation of interest to the full extent originally demanded.[1]

(4) Still more shocking to the old-fashioned intellectualist will be the definition of truth in terms of satisfaction. If "truth will be a judgment which, when we reflect, satisfies us" (p. 153), and if "a judgment in the last resort must in a sense depend on my feeling," and is "true or false in the end because it is felt to satisfy me in a certain manner, or felt again in a certain way to be offensive" (p. 172), 'truth' becomes a species in the genus 'satisfaction,' quite as irrevocably as when it is defined as 'logical value'. Nor can any insistence on the specific peculiarity of the so-called 'theoretic' interest undo the humanising effect of this classification. For no one has ever taken exception to the term 'theoretic' as a convenience of reference; what was condemned was the absolute severance from human interests which was advocated under cover of this name.

In spite of these handsome and in some respects decisive concessions, however, it cannot be contended that all traces of absolutism have been eliminated. Indeed Mr. Bradley begins his article with a fine flourish of absolutist principles. "Philosophy cannot exist apart from absolute sovereignty, and we have to choose between monarchy and chaos" (p. 153). This has the true ring of the absolutist faith in Truth by right divine, which must be all or nothing and cannot abide the licentious freedom of republican election by human voters.

But this impressive proclamation is wondrously attenuated in the sequel. The sovereignty of Absolute Truth is reduced to a constitutional monarchy of the most abject kind. The infallibility of absolute truth is proclaimed as an essential dogma in words alone; in practice it is restricted to the fleeting moment in which the judgment is made. "Our last judgment, and that is our present judgment, must be taken or rather must be treated as infallible" (p. 153), and while making it we "cannot entertain the possibility of its error". But as soon as it is made, we are free to turn upon it and to rend it. "You can reject it, in part or altogether, as a more or less complete mistake" (p. 154). Nevertheless it is superseded by a successor as 'infallible' as ever it was.

Nothing at first could be fairer or more charming. The absoluteness of Truth is maintained in all its theoretic rigour. And yet, in practice, ample room is conceded for the flexibility, which is

[1] *Cf. Humanism*, pp. 53-54, 58.

essential to the progressiveness, of truth. For *de facto* truth is in flux and at the mercy of the last speaker; the successive truths succeed (and fail) 'as Amurath to Amurath,' or (to be more modern) as the infallible successors of St. Peter. Truly this μονόχρονος ἀλήθεια, dignifying even the meanest with ecstatic gleams of infallibility, reminds us of nothing so much as of the pleasures of Aristippus! Or shall we even proceed to argue that since we are always in the presence of a 'last judgment,' we are all of us unceasingly infallible? It seems almost brutal to criticise so successful a synthesis of discordant views.

And yet does Mr. Bradley really think that he can thus slur over the breach between the immutability and the progressiveness of truth? No humanist of course need contest a verdict which awards him all the substantial stakes and merely saves his foe's face with phrases: but will the champions of the Eternal Verities be equally appeased? Have they not been rendered consummately ridiculous? To those afflicted with a sense of the humour of human things a claim to infallibility is always funny, and that it should be involved in the belief in absolute truth constitutes the crowning absurdity of this belief. But the infallibility becomes irresistibly comic, when it is such a little one, so overweighted with its name, and so ludicrously ephemeral. For Truth is no longer a possession for ever; it has become an indulgence for the moment.

Mr. Bradley, doubtless, has been subtly joking. He has been altering the meaning of the word 'infallible'. One can see of course what he means, despite the paradox, and thoroughly approve of the many sensible (and pragmatic) things he says in the same context about the way assertions are corrected, upheld, withdrawn and superseded. All that his paradox really means is that whenever we make a judgment we claim truth for it, and that it is recognised as claiming full truth, if its *bona fides* is not questioned. This much is a formal feature of all judgment as such. But how woefully little it is, in view of the way we habitually treat such claims after they are made! How few of them survive for any length of time! How needful it is to criticise them all! How little real validity this formal claim ensures! And so must not the verdict be that this whole doctrine of the 'infallibility' of the last judgment is merely one of the shabby little mysteries of Formal Logic?

If Mr. Bradley demurs to this conclusion, he must deny that it is psychologically possible to make a judgment with a full consciousness and anticipation of the probability of its failing. He must say that we cannot in making a judgment *expect* it to be falsified. It is astounding that he seems to say this—"I cannot, while I make a judgment, at the same time also doubt it" (p. 161). Why not? Where is the difficulty? It is always hazardous to dispute the idiosyncrasies of others, but can any one have become dogmatic and uncritical enough to have become incapable of doubting an

assertion he thinks just worth making? Most of us, at any rate, are quite capable of this. We have had much experience of past failures. We have learnt to judge in the light of past experience. We have acquired the habit of making *tentative experimental* judgments, recognised as such, just in order to try the alternatives and with every intention of dropping them as soon as they fail, and with little hope that they will succeed. What then is it but an abuse of language to describe judgments made in such a frame of mind as 'infallible'?

It is hard to believe that if Mr. Bradley had distinguished clearly between the formal claim of a judgment and its validation by subsequent experience, he would have mocked absolutism with this paradox. Unfortunately he does not avail himself of this distinction and thereby renders his doctrine (in so far as it is taken seriously) inconsistent and almost unintelligible.

On the one hand, as we saw, he maintains an 'infallibility' of the last judgment, which can only refer to claims, since, as he allows, it may always be reflected on and corrected. 'Infallibility,' therefore, is a property of *truth-claims* as such; it is possessed by 'truths,' misapprehensions, and 'errors' alike. This follows also from the social aspect of truth. In the absence of any Absolute which can enforce its infallibility with omnipotence, every one's judgments become equally 'infallible' with every one else's. If therefore A affirms and B denies the 'same' assertion, it is both true *and* false at the same moment. And that *infallibly!* In other words, we are driven back into that Platonic interpretation of Protagoreanism, which Mr. Bradley would presumably regard as the 'wrong' sort of 'scepticism'. Or will he postulate a Pope to give infallible decisions? Surely Mr. Bradley's doctrine leads to some curious infelicities of nomenclature!

On the other hand, he defines truth as "a judgment which, *when we reflect*,[1] satisfies us". If this be taken strictly, it identifies 'truth' with *validity*. For it implies that there is no 'truth' until there has been 'reflection'. It thus both excludes truth-claims, and overlooks the prospect of the *immediate* satisfactions which prompted to the claiming of the 'truth'. Surely the whole doctrine rests, flagrantly, on the 'ambiguity of truth'.

In any case, the doctrine of the infallibility of the last judgment resolves itself in the end into an ultra-Humian scepticism, which dissolves all continuity of mental life into momentary affirmations having no logical connexion with anything that precedes or follows. Whether Mr. Bradley himself has seen this consequence, and has intended it to be understood, is however another question, which we shall shortly have to discuss. Only it is important to observe how with Mr. Bradley (as with Mr. Joachim) the notion of absolute truth ends in scepticism, because for absolutistically biassed minds

[1] P. 153, italics mine.

the easiest way to pragmatism lies through a scepticism which shatters the absolutist conceptions by displaying their intellectual failure, and so leaves the mind open for the pragmatic reform of conceptions which will not work while they are taken intellectualistically. If, therefore, Mr. Bradley is moving towards scepticism, he may be on the way to genuine pragmatism.

But Mr. Bradley has never allowed his own thinly-veiled scepticism to interfere with his reprobation of other people's. So, here too, he adds a hit at his omnipresent double, the sceptic. This time he is discovered, paradoxically enough, in the disguise of a naïve believer in the veracity of memory! The *tour de force* which reveals him in his naked iniquity contends that because Common Sense has discovered that memory is not infallible, it stands committed to regarding memory as utterly fallacious. "If my present judgment is to depend on something falling outside of itself,[1] then unless that something can be taken as infallible, my judgment must be taken as liable to error" (p. 157). By this argument Common Sense is to be intimidated into 'unlimited scepticism'. But surely 'liable to error' does not usually mean the same as 'positively erroneous,' and even in formal logic it does not seem legitimate to infer from the admission that 'some memories may be wrong,' that all must be. This hectoring of Common Sense, moreover, seems the more unkind that it really agrees entirely with Mr. Bradley as to the value of memory. Like him, Common Sense holds that though memory may err, it is better to trust it until grounds for suspicion arise. Mr. Bradley treats it as the Platonist does the Protagorean when he declares that 'man *is* the measure of all things' means 'man can measure and know nothing,' and that 'all assertions are true to some one or other' means 'nothing is true to any one at all'. But to twist the plain meaning of such assertions into a constructive scepticism is merely to reveal a deeply ingrained sceptical bias of one's own. Mr. Bradley, moreover, reveals his scepticism also in his fine contempt for consistency, even with himself and in the same paper. For when condensed to its essentials, to what does his argument on page 157 reduce itself but this—'You feel certain, ∴ you are a sceptic'? Whereas on page 161 it runs 'I doubt, ∴ I am infallible'! Such results as these show that the sceptical 'moment' in Mr. Bradley has been gaining at the expense of the absolutistic, and prepare his readers for the astounding licence of his 'practical creed'.[2]

II.

We come next to Mr. Bradley's Discussion on the 'Ambiguity of Pragmatism,' and there find him as careful as ever to avoid contest-

[1] This narrow interpretation of what is 'inside' the judgment, is hardly consistent with the subsequent discussion of what the 'unity' of the 'subject' involves.

[2] P. 230; *cf.* p. 381 of this article.

ing the primary affirmations of Pragmatism, and as eager as ever to contend that if there is any truth in Pragmatism, he has said it all years ago. His own position, however, continues to differ markedly from the pragmatic, and he finds a number of difficulties in the pragmatic doctrines he considers. His objections may be divided into (1) those which are simply irrelevant, (2) those which arise from a disregard of already extant answers, (3) those which betoken a misconception of the pragmatic method, (4) those which answer themselves, and (5) those which it is perhaps expedient to discuss.

(1) Of the first kind the chief example is his demand to know what Pragmatism thinks of ethics and æsthetics. Why he should be so insistent about this, is unfortunately never explained. For the question is simply irrelevant. Pragmatism does not, as such, have any opinion in these subjects. The mystery is to understand why any one should think that the adoption of a pragmatic theory of knowledge should alter his tastes and affect any man's enjoyment of æsthetic and ethical values. Why should the perception that truths are values interfere with the recognition of any other immediate or end-values? Mr. Bradley should really condescend to explain why a pragmatist should not enjoy his dinner or his golf. As it stands the objection appears to rest on a confusion of logic with ethics and æsthetics. For plainly pragmatic *logic* is not concerned with the ultimate *ethical* end, or the nature of *æsthetical* value.[1] Its observation of the ways in which men make truth is not affected by the diverse nature of the ends which inspire truth-seeking or of the immediate satisfactions which the process yields. For example, to controvert Mr. Bradley may be deemed by one good sport, by another painful duty; but the zest of the one and the reluctance of the other do not necessarily show themselves in the arguments they use. The pragmatic method assumes nothing but the existence of values. It is neither concerned to affirm nor to deny that what has value as a means (instrument) has or has not value as immediate experience. It claims to represent the actual procedure of all, whatever their aims and whatever their satisfactions. Mr. Bradley has been told this before, by Prof. James, as well as by others, but he seems unable to see that a method is not bound to be a metaphysic.[2]

Difficulties of the second class are found in his allusions to the making of truth, the relation of social to individual valuations, the nature of unpleasant truth and the problem of error. In the third class must be put his difficulties with the long run, *i.e.* the progressive revision of decisions, and his demand to have an *ultimate* test of knowledge and validity (pp. 228, 235), which ignores the constant

[1] It is not, however, true that their existence has been denied. *Cf. Humanism*, pp. 203, 212.

[2] And yet he can excellently declare that he has "seen far too much of metaphysics to think of staking vital issues on the results of speculative inquiry"! (p. 229).

revaluation of truths, and moreover does not seem to be consistent with the account on page 230 of his own 'practical creed'. Under this head would fall also the naïve example he adduces of a useless truth (p. 227). For it clearly assumes just the sort of abstract case of an already-made truth, which the pragmatic method condemns as utterly uncritical. In the concrete no man would believe in his wife's infidelity except upon what seemed to him sufficient evidence. He would always, that is, have to *prefer* this belief to an alternative, and regard it as the *less unpleasant* of the two. He might even derive a certain positive satisfaction from it, *e.g.* as explaining a resemblance in his child which had long puzzled him. So much for the use in the handling of experience, which would lead to the acceptance of the 'unpleasant truth'. Subsequently it might continue to be useful, and profoundly affect his future action and even the course of history. It would therefore be a 'useless' truth only in a very popular sense, and so long as Mr. Bradley can think that such objections are relevant he simply shows that to understand a method is quite a different thing from adopting some of its results. It evinces perhaps a similar failure to grip the pragmatic method when Mr. Bradley argues (p. 236 *n.*) that a Darwinistic account of truth as that which prevails cannot be consistently universalised. Why not? Surely neither the Darwinist nor the pragmatist are concerned to show that their conception satisfies the rationalist's notion. It is enough for them if their 'truth' works and prevails and their general theory of truth freely submits its truth to its own test.

Among the difficulties of the fourth class the question of what 'practice' means stands out. It clearly depends on how 'theory' is understood, and on this point it may be well to repeat the explicit answers already given.[1] The fundamental 'ambiguity' Mr. Bradley finds in pragmatism has a purely verbal origin. It is a question as to how the terms 'theory' and 'practice' are to be applied to cognitive situations. Mr. Bradley greatly confuses this issue, through paying no attention to pragmatist usage and insisting in foisting his own rationalism upon it. Here then is the first of the points to be further elucidated.

(1) Mr. Bradley's use of 'theory' and 'theoretic' is profoundly unpragmatic, and has been criticised as such.[2] Naturally, therefore, he is perplexed when he tries to read it into Prof. James's utterances about the 'theoretic'. For the latter, as he clearly explained long ago,[3] uses it as a current term, and without prejudice to his right to explain it humanistically. To avoid such confusions it is necessary to distinguish three things—(*a*) The current usage of 'theoretic' as a term of reference, the interpretation of which is in dispute. It is imperative to treat this term as neutral to begin

[1] *Cf.* James, *Talks to Teachers*, pp. 26-27, and *Studies in Humanism*, pp. 128-131.

[2] *Studies in Humanism*, pp. 126-128. [3] *Loc. cit.*

with, because otherwise there is nothing to dispute about. For if it is taken rationalistically, pragmatism is clearly non-suited; if it is taken humanistically, rationalism becomes a false inference to an otiose transcendence.

(*b*) The rationalist interpretation evolves out of the usage a belief in a *purely* theoretic, *independent* and *useless* knowledge, which is conceived to be 'higher' than the useful variety, and can easily be made to glide over into an assertion of a *transcendent* truth. It is this belief which Mr. Bradley never quite shakes off,[1] though at times he cannot but perceive its psychological impossibility.[2] To clear his position here of ambiguity he would have to formulate more explicitly his views on the relation of psychology to logic. But the general objection to this way of taking 'theoretic' may be put in the question—If every cognition, if every judgment, can come into existence only by commending itself to some human mind, how can it be said to be independent of its psychical context, or pure, disinterested and useless?[3] This question was formulated very early in the controversy, and so far no rationalist reply to it has been attempted.

(*c*) The humanistic explanation of 'theoretic' has avowedly a double root.

(1) All cognitions arise out of a psychical context. (2) It is an empirically observed fact that knowing is a biologically valuable function. At first these two *aperçus* seem discrepant, because not everything that seems psychically valuable to an individual is also biologically valuable and worthy of promotion to the rank of 'objective' truth. But this discrepancy is no help to rationalism; for neither biology nor psychology can sanction a 'pure' and 'independent' theory. Such phrases are merely popular, unless they imply a real transcendence of human cognition. If they are taken strictly, there are *no* truly theoretic functions, and 'theoretical interest' is a contradiction *in adjecto*. *All* interest is human; all truth is humanistic. Moreover it is soon seen that the biological must exercise a certain control over the psychical values. Neither intellectual games nor morbid or excessive addiction to less profitable forms of knowledge can be indulged in without limit. This also was pointed out very early.[4] This whole humanistic derivation of the theoretic Mr. Bradley has steadfastly declined to recognise; but he has no right to ascribe ignorance of it to Prof. James.

(2) His reason probably lies in his conception of the relation of origin to validity. This antithesis is taken quite abstractly and without regard to the connexion between them. Mr. Bradley seems to think that even though the cognitive functions must be admitted to have arisen out of practical necessities, they may yet have *become*

[1] Pp. 227, 231, 232, 233, 237. [2] Pp. 233-234.
[3] *Cf. Humanism*, p. xiii.
[4] *Cf. Personal Idealism*, p. 85 *n.*; N.S., No. 59, p. 386 *n.*, and *Studies in Humanism*, p. 7.

'independent'. *How*, he never explains, and nothing would conduce more to making intellectualism intelligible than that some one should undertake to fill up this gap. Anyhow there is no other way of meeting the humanist contention that relation to human purposes guides and controls the development of the 'theoretic' function throughout.[1] Until this contention is met, 'independent' must be taken strictly as = 'transcending human knowledge'.

(3) That Mr. Bradley should now for the first time seem to disavow this 'transcendence' is not the least curious feature in his article (p. 227). And if it either had been or could be disclaimed, it would have to be admitted that the backbone had been taken out of the controversy. But can it? Has it not been the chief offence of Absolutism in pragmatic eyes that the absolutist view first put truth out of connexion with human knowing, and then asserted an unintelligible 'correspondence' between them?[2] Mr. Bradley's conversion is a bit too sudden. One can hardly believe one's ears when one hears him assert that he has "now for some time accepted" the impossibility of the transcendent correspondence. When, how and where did he 'accept' it? Was the Absolutism of *Appearance and Reality* nothing but a practical (*sic!*) joke played on his fellow-philosophers? Anyhow it would be interesting to know the date. Last year the 'transcendent correspondence' still figured as the most obvious of the three possible interpretations of his theory. And even if the enigmatical article in N.S., No. 62, were to be read pragmatically, he can hardly hope to pass off the point so easily. His old theory has been attacked by various pragmatists as involving this transcendent correspondence so long, and he has been so reluctant to reply and to show how this attribution could be avoided, that they will naturally insist on slaying the fatted calf in honour of his conversion.

These three points cover all the questions on which Mr. Bradley had a right to explanations, and it will be seen that the differences between him and pragmatism are still formidable. But something must be set against them.

(1) First and foremost the final admission (p. 237) that "for truth to pass into a new practical result may be called truth's natural and normal end". Before that he had 'agreed' (p. 235) that "when we reflect and when we come to the criterion of truth, the truth of an idea is inseparable from its theoretical results". This sounds remarkably like the principle of Peirce. Clearly, however, the substitution of 'theoretical' for 'practical' will make a vast difference, unless the former is taken in the humanistic sense explained above. With Mr. Bradley's use of 'theoretical' this would not be possible. Even in his sense, however, it involves a recognition of a principle which logic hitherto has failed to admit. It ex-

[1] This indeed is the essential point. The *origin* proper of truth is not strictly a *scientific* question. It is conceivable as an 'accidental variation'.

[2] *Cf. Studies in Logical Theory* and *Studies in Humanism.*

cludes a *merely formal* view of truth,[1] and so should involve the distinction between truth as claim and as validity. But it is not explicit enough, and in view of the confusion as to this distinction noted above (p. 375), it is doubtful whether Mr. Bradley would go so far.

The conceptions of truth as (2) logical value and (3) yielding psychical satisfactions reappear in this Discussion (pp. 228, 231, 233), though not perhaps as evidently as in the article, in dealing with which their significance has already been discussed. The unity of the good and the true, however, is still contemplated as a distant, and probably unattainable, ideal. Mr. Bradley has not yet condescended to study it as an empirical occurrence in every 'true' judgment which is pronounced 'good'. It is worth noting also that though Mr. Bradley does not hesitate to appropriate the 'principle of immanent Reality' (p. 229) he does not state that all these principles have secretly been familiar to him for the past quarter of a century.

(4) There remains Mr. Bradley's "practical creed," as described on page 230, that "there is in the end no truth for us save that of working ideas". This sounds very pragmatic, as do the admissions that our individual sense of value is ultimate, and that no theoretical criterion which actually so far exists is final. All this seems closely akin to the insistence on human values and the emphasis on the progressiveness and continuous remaking of truth, which render humanism so irreconcilable towards a static Absolute.

Nevertheless these dicta are all set in a context which renders their meaning decisively different. Their true analogue is not the pragmatic Criticism, but the Humian scepticism, which also sought to atone for its philosophic failure by laxity of practice. It should be noted (1) that until a year ago Mr. Bradley's scornful concessions to the weakness of human truth—'anything handy is good enough for practice'—always used to be contrasted with visions of an absolute truth, possessed *ex officio* by an Absolute which existed expressly for the purpose of transcending the difficulties of Mr. Bradley's philosophy. But it has probably been noticed that ever since the Absolute was attacked, it has disappeared, as though by magic, from Mr. Bradley's vocabulary. It was absent in N.S., No. 51. And in N.S., No. 62, it was finally thrown over. The consequence was that the implications of Mr. Bradley's doctrine became wholly sceptical. But until now this was never publicly admitted. The immense importance of the present passage lies in this, that Mr. Bradley, after a long course of privateering under the Absolute's flag, at last hoists the Jolly Roger, and avows himself a sceptic. The 'theoretic' truth which is unattainable by man is retained simply and solely in order to discredit theoretically the 'practical creed' men are forced to live by. And as it is assumed

[1] In Mr. Sidgwick's sense.

that the latter is hopelessly inconsistent, we are further told it does not matter how blatantly contradictory are the ideas we choose to live by. Any old nonsense will do—with a sardonic sneer at religion. Thus the doctrine is not only (1) sceptical but also (2) intellectually demoralising.

Now it ought to need no pointing out that neither part of this reasoning can be approved by pragmatism. It must contest the right ('theoretic,' if you please) to retain the void and empty notion of a 'theoretic' truth which has been eviscerated of its content and stripped of every function but that of confounding our truth. But the retention of this *caput mortuum* of a defunct intellectualism seems wholly optional. If it is cancelled, *'practical' human truth becomes the only truth there is.* How then can it be otherwise than valid and *optimi juris?* The foundations of Mr. Bradley's scepticism are exploded.

Again (2) while pragmatism desires, as zealously as Neo-Bradleyanism and in contrast with the more stalwart version which insisted on the 'metaphysical satisfaction of the intellect alone,'[1] to do justice to the whole of human nature, it must shrink from the licentious demand to be "emancipated once and for all from the narrowness of all one-sided attempts at consistency". It will not at once abandon thinking as soon as it has discovered a flaw in the instruments past thought has fashioned. It need not ascribe infallibility to their makers. It sees no reason to attribute the 'contradictions' which wrecked the 'theoretic' reason to anything more irreparable than the use of false conceptions and a false method worthy of repudiation. It is conscious, moreover, of having a method of its own of appraising the intellectual status of rival theories. So long as these exhibit vital value in various degrees and kinds, their logical value can be determined, and no abatement need be made from the rigour of its reckoning. Logic, therefore, is reformed and not rejected.

What then is the upshot? These latest utterances of Mr. Bradley's reveal the full marvel of his philosophic position. He is engaged in the arduous feat of trying to ride three horses at once, Absolutism, Scepticism and Pragmatism. Not abreast, however, but in succession. For at present Scepticism is distinctly to the fore, with Pragmatism running up, and Absolutism, evidently beaten and no stayer, a bad third.

Has Mr. Bradley then declared to win with Scepticism? May we exclaim "*das also war des Pudels Kern*"? Is its ultimate triumph assured? Not at all. Nothing is more improbable or even impossible. For Mr. Bradley's Scepticism is a very peculiarly sociable thing and cannot live alone. It is so essentially bound up with his absolutism and his pragmatism that his present posture is not a vain

[1] *Cf. Appearance and Reality*, p. 154.

display of acrobatic virtuosity, but a matter of sheer necessity. His philosophy vividly reminds one of the story of Zohak and his serpents. It was pure absolutism once, some time in the dim past, till the Demon of Doubt embraced it. And then there sprang up out of it with lambent tongue the coiling snake of Scepticism, and on the other side to balance it the Pragmatic snake-devouring Dragon.[1] It loves neither and neither love it or each other, but it can divest itself of neither, because both are of its essence and necessary to its being. The Scepticism, which seems the greatest part of it just now cannot stand without the support of Absolutism, nor move without Pragmatism. For unless the absolutistic notions of truth and reality which Mr. Bradley's Scepticism feeds upon are eternally retained for this very purpose, his Scepticism is deprived of nutriment and dies of inanition. Again, without a 'practical creed' the whole combination cannot live. To maintain itself in being it must incorporate ('somehow') the pragmatic values of truths that work. The Scepticism alone cannot stand the pragmatic test, and must call to its aid a certain pragmatism, to which it must subordinate even itself in practice. Its nature is thus essentially parasitic; on Absolutism for its 'theory,' on Pragmatism for its 'practice'.

And yet has it quite grasped that an *alternative* to it is intellectually in existence? Instead of retaining the faulty conceptions of absolutism and accepting their sceptical consequences, may we not avoid both the scepticism and the internal complications of Mr. Bradley's composite philosophy by systematically reforming the conceptions that have failed? The sceptical interpretation thereof after all was optional. It was even arbitrary, seeing that nothing guaranteed the infallibility and immutability of the absolutist conceptions and that we can avoid both the scepticism and the dualism between 'theoretic' and 'practical' truth which Mr. Bradley's choice entails, by adopting the pragmatic notion of truth. Lastly, it is clear that the existence of this alternative turns the sceptic into a sort of voluntarist, *malgré lui*. And this may so disgust him with his scepticism as to force him further in the one direction which is open. What will be Mr. Bradley's next move, therefore, is a pretty problem. Time will show. But it is no wonder that he is not inclined, just now, to answer searching questions about the state of his own opinions. And it is quite conceivable that some day he may himself dedicate to Asklepios the matutinal chanticleer that stirred him out of his coma in the night of the Absolute in which all human truths are equally obscured, and is even now summoning him to dismiss from his nightmare the obstinate spectre of scepticism.

F. C. S. SCHILLER.

[1] *ὄφις ὄφιν κατεσθίων γίγνεται δράκων.*

PRECISE AND NUMERICAL IDENTITY.

THE following observations have been to some extent suggested by recent controversies in MIND, and are offered as a very humble contribution to the discussion of the question, What is the meaning of Identity?

It would seem *primâ facie* that corresponding to the two aspects of all 'things' which can be subjects of predication (and of their names), *identity*, *identical*, may refer to intension (qualitative aspect) or extension (denotational, existential aspect).[1] If (one thing) A is identical with (another thing) B, then identical must mean exactly alike, indistinguishably similar, 'precisely identical,' as we admit that two half-crowns are, when we put a private mark upon one as a means of knowing it from the other, of discriminating it as *not* numerically identical—in order, *e.g.*, to detect theft—or as we may admit two sheets of notepaper, or two penny stamps, to be. In such a case, there is intensional or qualitative, but not denotational 'identity,' precise but not numerical 'identity'. In the contrasted denotational (or numerical) sense of identical, a thing can be identical only with itself. Thus the stamp I now take out of my purse is numerically identical with the stamp which you gave me yesterday in exchange for another. Although indeed its perceptible attributes are unchanged, and it looks just the same, this is not all, for denotationally or extensionally it is the very same stamp, it is numerically identical—it has had, we will admit, a continuous existence from yesterday to to-day.

Further, this very stamp is the stamp which the English Ambassador at Washington affixed a fortnight ago to the envelope from which you cut it—it has had a continuous existence from that time to the present—we have not here a case of "mistaken identity". It has, however, since it was posted, changed in appearance, it has not the same visible qualities—it has been defaced by the Washington postmark—it has also had a corner torn off. Thus though

[1] I use *Intension*, *Connotation*, in the senses distinguished by Dr. Keynes, *Formal Logic*, 4th ed., pp. 23, 24. "The term *intension* has been used to express in the most general way that aspect of general names under which we consider not the objects called by the names but the qualities belonging to those objects."

"We include in the *connotation* of a class-name only those attributes upon which the classification is based, and in the absence of any of which the name would not be regarded as applicable."

this stamp is in a certain sense identical, *i.e.*, numerically identical, with its original self, it is not qualitatively or intensionally 'identical,' it is not *precisely* similar. In the same non-qualitative, most usual and perhaps preferable use of *identical*, we should say that King Edward VII. is the identical person who six years ago was Prince of Wales. So the Koh-i-nor, which now belongs to him, is the identical diamond which a few years ago belonged to Queen Victoria. In these cases it is in virtue of persistence through change of time, it may be with change of intrinsic quality yet always with a certain residuum of unchangingness amid change, that we attribute identity in the sense of continued existence. Thus, if this portrait is genuine, if it is what its owner claims, it is the identical picture which Gainsborough painted of Lady Mulgrave about the year 1785. If it has not changed, so much the better; but even if damaged, it is the 'identical' picture, it is not a copy or a counterfeit.—In each sort of case, we have a kind of unity in difference: (*a*) qualitative unity (= similarity) in distinct subjects of attributes, (*b*) the unity of continued being in change of time (and perhaps also of unchangingness in circumstances and relations not arising out of time-change) with or without some change of intrinsic quality.

Can we ever assert 'identity' (exact similarity) of intrinsic quality (= 'precise identity') in anything, combined with identity of being (*continuity of being, numerical identity*), and also without *any* change of circumstance or relation? It seems to me clear that this could be so only if we could have something which not only exists (or is) without change of intrinsic quality but also exists or is 'timelessly,' and that we could only express our assertion in the form *A is A*. But it would be necessary to inquire more particularly, What can be meant by 'timeless'? Does *timeless* mean (i.) what is not in time, does not last through time (some time or all time), or (ii.) what is not affected by lapse of time? If what is meant is (i.), the burden of explaining what exactly is connoted by 'timeless' being, occurrence, or cognition, and of pointing out to what *things* this timelessness can be attributed, lies upon the person who asserts 'timelessness'.

If (ii.) is meant, then it would appear that *timeless* can at any rate be asserted of any and every truth. In fact if truths were not all unchangeable, any assertion of change would become unmeaning. And in this sense we may too by a convenient and indeed necessary logical device attribute timelessness to Concepts (*i.e.*, to Abstract and to General Ideas), the *raison d'être* of which is to fix and symbolise exact qualitative one-ness. Absolute unvaryingness (precise 'identity') and continuous existence (continuous being, 'numerical' identity) of concepts may however be allowed to be a fiction, an ideal limit to which they approach more nearly, the more nearly they fulfil their indispensable function in knowledge.

(1) If we assume that both Subject and Predicate in a categor-

ical assertion can be taken *in intension only*, difference of quality or content would force us to say of A that it is not-A.

(2) Difference of being (extension or denotation) only, would force us to say that *A is-not A*. (1) and (2) are both impossible forms of assertion, and it seems that we cannot assert difference of intension only or difference of extension only. In the admissible and significant *A is not B*, difference of intension makes possible the assertion of difference (=denial of identity) of denotation.

(3) If there is complete absence of all difference of any sort, we can only say that *A is A* (Greenness is Greenness, Humanity is Humanity, etc.), the whole of A and nothing but A. Thus it appears that significant affirmation of *identity with itself* of any A, the identity of which is exclusive of *all* difference of every sort, is barred, and *A is A* seems a mere form unless we *interpret* it to mean *A is AB*, or *A is B*, both of which are embraced under S *is* P, the ordinary formula of categorical affirmation. In this formula the identity asserted is denotational, the copula has a denotational import, while the difference of symbols has an intensional import. If not, *S is P* would be an impossible form of assertion. For intensionally S *is* not-P, and unless denotationally S *is* P, we should have to say *S is not P*. This account is confirmed by analysis of any categorical affirmation (*cf.* MIND, 1893, p. 441, etc.).

(4) There may be many cases of 'identity' of both denotation and intrinsic quality, in difference of time, circumstance and relation (though we have to remember that so-called 'identity' of quality means only exact resemblance and is quite distinct from identity of denotation, extension, or being). Take such things as a postage stamp, a coin, a stone, a book, a picture. This book (*e.g.*) is the one which Colin gave me for a Christmas present; that sovereign is the one which you paid me yesterday in discharge of your debt; that picture is the one that was bought by a Mr. Campbell at the Price sale for ten thousand guineas. All these assertions are expressed in the form *A is AB*, and we see that while (as before observed) the affirmative copula imports identity of denotation, the difference of symbol (A, AB) imports here *not* alteration of the intrinsic quality of the subject (A) spoken of, but attributions (B) of time, circumstance and relation, all of which (as above remarked) are included in *intension* as differentiated from *connotation* (see note above, p. 384).

Assertions of change or otherness of intrinsic quality in a (denotationally) identical subject are conveyed by propositions of the form *A is B*. *E.g.*, the amethysts which Betty picked up at Aberystwyth have been cut and made into a necklace; the last pair of shoes which I had from Box is nearly worn out. And any assertions in which we affirm of any subject (A) a Predicate having an altogether different content (B) (whether B connotes intrinsic quality, or circumstance, or relation), fall also into the form *A is B*.

We have then the *primâ facie* possible forms:—

(1) A is not-A,
(2) A is-not A,
(3) A is not B,
(4) A is A,
(5) A is AB,
(6) A is B.

From the above it appears that in significant categorical affirmation there *cannot* be complete 'identity' of intension as between Subject and Predicate, while there is complete identity of denotation, and in categorical negation there cannot be difference of denotation only or of intension only. In *S is P*, I affirm *identity of denotation in difference of intension*, in *S is not P*, I deny *identity of denotation in difference of intension*, and as already pointed out the identity necessary to affirmative assertion must be denotational (numerical, etc.) identity.[1]

There is one kind of thing which taken strictly cannot enter into relations of thought or reality, and any attempts at affirmation about which fall into form (4), since nothing but itself could be affirmed of it as Predicate—*viz.*, Abstract Ideas in the sense in which Locke rejects them. We could not, *e.g.*, say of Humanity that it *is* anything but Humanity, taking it honestly in connotation only, (and as it is abstracted from Extension) its whole Intension is comprised in its Connotation. Man is rational, but it is not admissible to say Humanity is Rationality. Hence Locke asserts that all our affirmations are in concrete (*Essay*, bk. iii., ch. viii., § 1). Indeed such terms as Greenness, Rationality, which correspond to ideas of qualities abstracted from subject, time, and place, in which alone they can occur, if taken strictly cannot be either Subjects or Predicates, they are as incapable of entering into relations as Leibniz's *Monads*, and are supposed as immutable.

The fixity of the content of abstract ideas as entertained by any mind is guaranteed (so far as it is guaranteed) by definition of the names applying to the ideas—definition of the sort which sets forth conventional connotation, or (in some cases) extensional definition, *e.g.*, Green is the colour of grass, glaciers, sea-water, emeralds, malachite, etc. This holds of those relatively abstract ideas which are called General as well as of the Lockian Abstract Ideas—of green, man, rational, as well as of greenness, humanity, rationality. In the case of the general ideas, however

[1] Lotze, trying (in his *Logic*, bk. i., ch. ii.) to fit the ordinary categorical form *S is P* to the law of Identity (*A is A*), fails in the most absolute way, because he is trying throughout to work solely and entirely with Abstract Ideas; he is committed to a thorough-going conceptualism. After an elaborate discussion, he arrives in § 54 at the statement that "the impossible judgment S is P resolves itself into three others, S is S, P is P, S is not P". S is P "taken just as it stands" is "a contradictory and self-destructive form of expression". Quite so, if S and P are taken in connotation only.

(man, house, etc.), abstraction is made not from all denotation but only from denotation definitely fixed as to time and place, and from all intension except that which is selected and fixed in the definition (= connotation).

In these General Ideas we have a necessary instrument of thought. They fix, for thought, the living transient qualities of real existences. They can, it must be assumed, be applied in a variety of ways without being thereby altered—like the cubes of a child's letter game, or building blocks, or the men on a chess-board, or the cards of a pack, or the stones in a heap, or the letters of the alphabet, or the notes of the musical scale. Their very function and essence is to remain unchanged throughout an endless variety of applications. *They* are the only things which in so far as they are what they are meant to be, are the same (*i.e.* are unchanged), *semper ubique et pro omnibus*.

In use, in application, we have to restore the existential, denotational, time-and-space aspect, unique in every case, which (as well as much qualitative detail) falls into abeyance when an attribute as occurring in a Subject is abstracted and takes on the fictional provisional form of a Lockian Abstract.[1] And unless there were concretely related things from which general ideas of relations might be derived, it is difficult to see how definite concrete applications of such ideas could be made, why the idea-relations should ever fit actual things. In: This lake is sky-blue, Some rubies are rose-red, The Pacific Ocean is Atlantic-Ocean-colour, the notions of sky-blue-ness, etc., derived from Attributes of definite Subjects, are applied to Attributes of specified Subjects, and the denotation, which has been evanescently in abeyance, is restored. The notions of both quality and relation do not suffer any intrinsic alteration by being thus applied, in fact if they were changed by application it would not be they that were applied.[2] A general notion (unlike a living actual, continuously existing thing) if changed ceases to be itself, it vanishes and is replaced by something qualitatively different. And its connotation determines its whole being, so intensional change would involve numerical change.

And this characteristic of (relative) immutability (and consequent validity for thought) is none the less real because the origin and history of general ideas is to be sought in developing human experience, and connotational definition is both subject to revision and

[1] Compare, *e.g.*, the way in which quantification of the Subject-name in an A proposition falls into abeyance when the proposition is converted *per accidens*.

[2] *Cf.* Mr. F. C. S. Schiller's admission that in the sciences "respect for the sacredness of technical meanings is one of the first obligations inculcated on the student and constitutes a motive which only urgent scientific necessity and due notice avail to set aside" (MIND, October, 1907, p. 605).

has generally been preceded (in the natural growth of thought) by extensional definition; while also general ideas as psycho-physical occurrences probably always occur in close combination with other "mental elements" from which the practised mind is able to make abstraction. The general idea is in fact a kind of selective instrument—like a magnet to iron-filings—the corresponding general name being (as has been said) a sort of handle of the thing named.

Let us consider for a moment here an illustration discussed by Mr. Joachim in MIND for July, 1907, p. 414. "The note A," he says, "whether struck on this piano or that, or now or yesterday, is *the same* [=?] note. But it is not 'precisely and numerically the same,' if that means—as I presume it does—*the same to the exclusion of all difference.*" It is (Mr. Joachim goes on to explain) *not* "exactly alike but not identical," nor is it "numerically identical," but it is identical-in-difference [=?].

Such explanation of the point in dispute as is possible is, I believe, to be found by appeal to the distinction already referred to between abstract scientific, logical, conventional connotation (which is set out in definitions), and what may be called 'historical' actuality (the full concrete denotational and intensional entity). If we grant (as I understand Mr. Joachim to affirm) that as logically fixed, limited and defined "the note A" has always precisely 'identical' pitch, then "the note A," as far as connotation is concerned, is under all circumstances precisely 'identical'.[1] If this is so, if it is a certain absolute pitch (abstracted not from denotation but from all other items of intension, from the instrument of production, and every other circumstance whether like or unlike, connected or disconnected, relevant or irrelevant) that is connoted by *the note A*—there is and can be only one note A in the sense in which there can be only one letter A (*a*), one number 2, four conic sections, three species of triangle, one relation between the diameter and circumference of a circle.

Any actually produced (or even imagined) "note A" which as regards the element of pitch is "precisely identical" with any other pure "note A_1" is yet never, in actual occurrence, in all other respects (timbre, loudness, time, place, etc.), recognised as exactly like any other; such occurrences would be indistinguishable the one from the other—if there *were* two, we could not know it. As it is, while there is by supposition only one pure note A (= a note of a given pitch), every production (repetition, occurrence) of that one note is different in *some* respects from every other, so there need be no difficulty about distinguishing the various produc-

[1] It may however, I suppose, be plausibly maintained that the connotation of the note A refers not to *absolute* pitch but to position in the musical scale. A piano, *e.g.*, may be tuned 'flat,' and 'concert pitch' has varied. Further, it may be said that on a piano of seven octaves, there are (7×3) note A's (if we may count sharps and flats as well as naturals).

tions—by voice, harp, piano, violin, etc. Similarly if with one seal I impress the same unique device on a hundred documents, or write the letter *A* or the word *And* all over a page, or the motto *Per aspera ad astra* over and over in various kinds of script, there is still as far as meaning, value, or relevant quality is concerned only the one device, the one letter A, the one word And, the one motto *Per aspera ad astra.* But the occurrences in writing are many, and each distinguishable from all the rest.[1]

In an analogous way the meaning of any significant assertion A is B, is not altered by any other assertion, nor its truth if it is true[2] by any assertion whatever nor by the concomitant mood or impressions of the assertor's mind or any other fact. Unless A at Edinburgh can deny precisely and numerically *the same* assertion (or truth) which B at Oxford affirms (not of course the same speaking or writing of it), there could be no such thing as agreement or disagreement in thought, no argument, no refutation—in fact no such thing as general knowledge common to many minds, or even general knowledge in any one mind. No doubt if we consider the whole concrete case of *B at Oxford affirming* and *A at Edinburgh denying,* it must be admitted that though what the one affirms is what the other denies, yet the 'identity' of the thesis is an 'identity' which has different concomitants in the one case from what it has in the other—there is, therefore (if we choose so to express the condition of affairs), a complex '*identity*'*-in-difference.* The intensional or qualitative '*identity*'*-in-difference* of *e.g.* an isosceles and a right-angled triangle, requires (as all classification does) the comparison of things numerically different which are partly similar and partly dissimilar.

But this difference in the time and place, etc., at which the 'thesis' is apprehended, has no effect upon its meaning; these relations of time and place are relations of the persons affirming or denying and concern the history of the thesis, but are of a kind which (though not irrelevant to its history) is quite irrelevant to its meaning or to its truth, if it is true. The meaning, whatever it may be, is no more affected by them than the meaning of *A is at Edinburgh,* or *B is at Oxford* is affected by being asserted (1) at Cambridge and (2) at St. Andrews. The differences between A and B, and Oxford and Edinburgh, are no doubt profound, and of interest and importance for the unique individuals and places concerned, and those who have to do with them, but they are not of consequence for the meaning of any general statement main-

[1] In all that is said above, it is of course not meant to deny that a definition may, from time to time, be altered, or that terms may be ambiguous. In fact it is the main object of these notes to try and clear up to some extent such an ambiguity.

[2] Might it be said that an assertion is true if it asserts co-existence of qualities which are co-existent in the 'Universe of Discourse' to which reference is made?

tained or denied by A or B, the intrinsic character of which remains unaffected by variations of time and place, and the personality of its assertors. If this were not so, everything, as in Alice's shop in Wonderland, would be perpetually turning into something else the moment one touched it. One could not even juxtapose two assertions in thought without thereby altering both. The "solid ground" would "give way beneath our feet" at every step.

Suppose I assert that *all fronds of the Mountain Buckler fern are erect.* The meaning of the assertion is fixed and definite, and if true, it is true once for all. Quite obviously, my outlook, location, state of health or temper, and so on, cannot affect its truth or meaning in any way. And if I go on to say that the fronds are, also, lance-shaped in form, pinnately divided, that the pinnæ stand opposite (generally), that they are narrow and tapering and are pinnatifidly divided—do any of these affirmations, or all of them, in the least alter or modify the meaning of my original statement that all the fronds are erect? It must be admitted that no one of them alters the meaning of any other; but what *is* very importantly modified is my knowledge of, and power of 'identifying,' the thing itself, the actual object in time and space, the Subject of Attributes to which all these successive characteristics are assigned. All the successive predicates are related as joint characteristics of the whole which they qualify; they are related not as modifying each other, but as modifying it.

Significant statements (which are always abstract in a sense already explained, a sense which does not exclude concreteness) may be perfectly true as far as they go, though they can never comprise perfect and complete truth about historical reality or any part of it. That the interior angles of an isosceles triangle are equal to two right-angles, is an abstract truth, the meaning of which is not affected by the further abstract truth that the angles at the base of an isosceles triangle are equal to each other, or that any triangle is half of a parallelogram. The meaning of the assertion, This is an engraving of a picture by Gainsborough, is not modified or changed by the further assertion, The picture is a portrait of Lady Mulgrave, it is one of the artist's masterpieces, it is supposed to be now in America.[1] But though any one of these statements does not alter or modify the meaning of the others, each one does modify the hearer's knowledge *concerning the object which is spoken of.* Or take the three propositions: (1) The book I am reading is *A Blind Bird's Nest;* (2) It is a charming story; (3) It is by Mary Findlater, who is a sister of Jane Helen Findlater. The meaning of (2) and (3) does not in any way modify the meaning of (1), but (2) and (3) do add to the knowledge about the book I am reading which was conveyed by (1).

[1] It became known last January (1908) that Gainsborough's portrait of Lady Mulgrave had been since the Price sale in M. Groult's collection in Paris.

Similarly in furnishing a room the carpet, curtains, tables, chairs, pictures, and so on, are *what they are*, but the addition of them *to the room* makes a profound difference to its appearance and comfort. Or suppose again that the walls of my room are papered with a "chrysanthemum pattern" paper,—full of pink, blue, and yellow tints, and that I cause a plain pink frieze to be replaced by a plain blue one but do not change the paper, the paper is still by supposition the same paper—the same in denotation and in intrinsic quality—but the room looks very different indeed. And so with, *e.g.*, the outlines and colouring in a picture—each line and touch is what it is, but the picture, the whole, is modified by each. Every individual, every thing, every part of the universe, is unique, and has inexhaustible qualities and relations, but in as far as it can become an object of knowledge, it must be determined by the attribution of general ideas.

And in the constructions of memory, imagination, and inference, the same holds good—the general ideas are like 'dressed' stones which may be put together without mortar or cement, and can be rearranged for one mental construction after another without suffering any intrinsic change. They are thus 'precisely identical' amid changes of relation and of circumstance which affect *not* the general ideas, *but* the subjects of attributes which they qualify. Similarly with, *e.g.*, the letters of the alphabet, the notes of the musical scale, arithmetical and mathematical symbols (as already observed).

Whatever is in time or space has, it would appear, important relations with all other things in time and space. Among the attributes of anything in the world must be relations of some sort to everything else in the world. Tennyson's apostrophe to the "flower in the crannied wall" seems to present this point of view —completeness and coherence of knowledge is the ideal here suggested to us, to which we may by degrees approximate more nearly, but which we are always indefinitely far from attaining. No one thing (part of the world) can be *completely* known unless everything else (all the rest of the world) is completely known; we cannot quite fully know a part without knowing the whole. But it is only by help of general ideas, common names, fixed connotations, clear definitions, that we can make any steps at all towards the complete fully-systematised historical knowledge which is our goal; we cannot know the whole without knowing the parts. We must begin from contact with this part or that of the vivid but bewildering fulness of reality, and the most extreme and (seemingly) artificial exercise of abstracting thought has, as its one purpose, the bringing of that rich reality into orderly and intelligible connexion.

It is interesting to observe that certain categories of connexion, *e.g.*, classing and classification, may be applied to concrete things without in any way altering the existence and intrinsic attributes

of those things (though with most potent effects from the point of view of thought and its connexions)—no interaction between the actual things, no change in them, no joining and no separating, is produced by ranking them as like and unlike—in fact, if it were so, the relation would be self-destructive. But the relation between (1) thought and knowledge and (2) the things classified is profoundly modified.—A South African lion is entirely unaffected by being classed with his Asiatic namesake and distinguished from the Cape 'tiger' (panther), though to bring about contiguity in space between two such co-existing individuals, is to introduce historical relations of vital importance for the creatures themselves.

A steady recognition of the difference between the two fundamentally important uses of Identity, Identical above discussed (which might perhaps be provisionally distinguished as (1) Historical, (2) Abstract), might perhaps do something towards clearing up past controversies and preventing misunderstandings. The dispute in recent numbers of MIND, for instance, on the nature of truth, might have light shed upon it if it were recognised that (as I suppose) it is the historical identical in the most extended sense, the whole to which qualifying attributions are made, on the predominant interest and importance of which Mr. Joachim is concerned to insist, while it is an abstract 'identical' that is the ideal which Mr. Russell and Mr. Moore seem to have in view—the fixed meaning of immutable abstract 'entities'.

E. E. C. JONES.

INFINITE DIVISIBILITY.

MR. FULLERTON'S extremely ingenious attempt in the October number of MIND to find a new solution to the old puzzles which have come down to us under Zeno's name leads me to think that he and perhaps many others would take some interest in another way of looking at the question.

It is not really an Ontological question. What we are considering is not the true inwardness or real nature of Space or Time, but only our notions or thoughts about them. We want to make our ideas appear consistent with themselves, and when we have done that we shall leave it to the Realist and the Idealist to settle their true meaning if they can.

What we have to do therefore is to avoid all confusion of thought, to distinguish all things which can be distinguished from one another, and with this I think most of the puzzles will disappear. I shall show how we may proceed in the case of space only, because, as Mr. Fullerton remarks, it is a waste of energy to go twice over the same ground.

The first distinction to make is between space and figure. Space is known to us as room to move, but figures are points, lines, surfaces or solids constructed or existing in space. We find space, but we construct figures, and all these puzzles consist in ingenious plans for making us attempt to construct space. Space has no dimensions. Dimension and direction belong to figures. The length of a figure is its size in one direction, but you cannot take the size of space in any direction, nor can you find in space anything to point in one direction rather than another. When we are told that space has three dimensions, an explanation is always given which amounts to what has been just said. We are directed to draw through a point three lines perpendicular to one another, and these we are to take for the three dimensions of space. In point of fact we have constructed a figure and we find that it has three dimensions. The three lines we have drawn explain one another and supply us with three directions in which to measure, but we can in no way attach them to space so as to qualify it.

Again, figures are finite and divisible; space is infinite and indivisible. Take the question of divisibility first. We divide anything when we separate one part of it from the rest. This can only be done by putting between the parts something different from either

of them. Thus a point will divide a line into two parts, a line will divide a surface and a surface will divide a solid, and we can divide a material thing such as a sheet of paper by cutting it in two and letting some space intervene between the parts, but a line drawn on the paper only divides the surface not the paper, and nothing which we can do on or with the paper in any way affects the space in which it exists. If it were possible to drive two nails into space and stretch a line between them it might be said that space was divided, or if anything which is not space could be inserted between two parts of space then it would be divided indeed, but as nothing of the kind can be done we say that space is indivisible as figure is divisible. And having said that, we have said that space is infinite but figures are finite, for that is infinite which cannot be increased or diminished, multiplied or divided. Where there is a division there is a boundary, and from what is divided something may be taken away, and to it something may be added, and thus all things divisible are finite.

In speaking thus, of course by infinity I mean true or Metaphysical infinity. Mathematical infinity is quite another idea and in its own place an extremely useful one, but we must not allow ourselves to confuse it with true infinity. It is unfortunate that two ideas so different in themselves should have the same name, but we must take things as we find them, and notwithstanding the difficulty thus caused endeavour to keep our thoughts clear. Mathematical infinity is an endless progression and may be represented as a line stretching onwards without limit, or a number increasing without end. It is a construction, a sort of figure, and the line is looked upon as always being drawn onwards, the series of numbers as always growing, and hence what is Mathematically infinite is Metaphysically finite, since, however far the line may have progressed it may go farther, and however great the number may be it can be made greater.

Now a line is, in the Mathematical sense, infinitely divisible, but is not infinitely divided. To draw a line is to construct a figure; to bisect it when drawn is to construct another figure, but the line has not two parts until it has been bisected, or three parts until it has been trisected. If, as Mr. Fullerton suggests, it were necessary to suppose the parts to be there before I make them, it would be equally necessary to suppose the line to exist before I draw it, and everything else that I do to be done before I do it. The line is capable of having parts, but it has none; it is only one thing until I divide it, and it is capable of being divided without limit, because the process of constructing figures by cutting off smaller and smaller portions is one which gives us no idea as to how it might be made to end.

Mathematicians are in the habit of considering a line to be equivalent to a row of points, and for some purposes this is perfectly satisfactory, but for other purposes it is only an approximation, and

for Metaphysics it is absolutely false. As a Mathematician, I say that a line is composed of an infinite number of points; as a Metaphysician, I say that a row of points differs from a line as much as a circle does from a triangle. When I am discussing a Metaphysical question, I must keep to the Metaphysical way of looking at things and consider the line to be the continuous course marked out or passed over by a moving body. If the body moved by jerks, the line might be considered to have parts marked out by the beginning of each jerk, but if the motion is continuous, the line is continuous and not divided, although capable of division, not containing points, although affording a means of distinguishing positions or points. Points, to the Metaphysician, are only positions which must be distinguished or defined by reference to other figures, but which cannot be made to combine because they have no magnitude. Mathematicians add points to points to make lines, and lines to lines to make surfaces, but then the point must be regarded as a small surface obtained by division of a larger surface progressing without limit. From a Mathematician's point of view such a surface differs in no way from a point; to a Metaphysician they are absolutely distinct.

I have called these ideas Metaphysical and Mathematical, but they are evidently part of the furniture of the human mind, easily developed by any one who thinks, but very easily confounded. Zeno's puzzles rest on such confusion, and when it is avoided the difficulty vanishes.

J. N. SHEARMAN.

VI.—CRITICAL NOTICES.

Philosophische Voraussetzungen der exakten Naturwissenschaften. Von Dr. ERICH BECHER, Privatdozent der Philosophie an der Universität Bonn. Leipzig: Johann Ambrosius Barth, 1907. Pp. vii., 244.

DESCRIBED as a defence of "atomistic and kinetic realism" against the attacks of a "radically positivist" theory of knowledge, Dr. Becher's careful and excellent work suggests the beginning of a new change in the meanings of philosophical terms. For the "realism" he upholds is not incompatible with that which in English thought has been known as idealism; and the "positivism" he opposes is an extreme phenomenism in comparison with which, as he observes himself, the positivism of Comte involves a whole-hearted acceptance of traditional hypotheses. The typical representatives of the new doctrine are Ostwald and Mach. Its aim is understood to be the elimination of every assertion about anything but actual sense-perceptions. Science indeed is still allowed the equivalents of the old "hypotheses"; but they are to be regarded as no more than useful "fictions". The representation, for example, of matter as atomic in structure, and the accounts given of the transformations of energy in terms of the motion of particles, cease for the new chemistry and physics to be anything but mathematical devices to facilitate calculation. An ideal science of "energetics" would dispense with all imaginary mechanism, and simply state that one kind of "energy" (heat, light, electricity, etc.) under given perceived conditions substitutes itself for another; no attempt being made at picturing the process to which this substitution corresponds. As those who have put forward the best-known expressions of the new doctrine are men of science, their positions cannot well be ignored in relation to scientific thought. It is in a scientific rather than in a metaphysical interest that Dr. Becher has submitted them to a judicial examination.

First he contends for the theoretical validity of hypotheses in general. By hypotheses are to be understood assumptions we may justifiably look forward to proving true or probable, or at the very least, possible. With a "fiction," the question of truth does not come in. The question is only whether it serves its purpose as a device for "economising" thought. How then does the hypothesis stand that there is an external world? For it is

the admission of a real external world that the "positivists" oppose. The dialectical case in their favour is skilfully put. The modern mechanical doctrine, it is first pointed out, has its foundation in the denial that the "secondary qualities" of matter are really in things. The primary qualities, the author goes on to show, are equally subjective. Extension has no claim to a reality that is denied to colour or sound. Touch cannot maintain itself as unquestionably corresponding to reality any more than sight; for it too is liable to illusions. To what quality of sense, tangible or visible, do the supposed real extended objects correspond? Between the "spaces" of the different kinds of sense it is impossible to decide. Is not the subjectivity of extension, then, in the end fatal to the mechanical doctrine, which seems to assert a known external cause of our perceptions?

In seeking a way of return from this revolutionary outlook, as he takes it to be for science, Dr. Becher first observes that by the phenomenists the immediate certainty of the given is not contested. From this in itself, however, he does not attempt to derive anything. On the contrary, his method is to show that for effective knowledge nothing can be got from it without a series of assumptions. For knowledge, in short, "we have to assume, what can be doubted" (p. 66). Beyond immediately given phenomena, it is true, we have unconditional certainty in the logical axioms (laws of thought) and in the forms of inference of analytical judgments: and this class of certainties too is not contested by the opponents of hypotheses. From what they admit to be immediately certain, however, he fully allows that nothing can be got by mere formal thinking thus regulated. Only with the next assumption do we make any real advance; and this is something that is not incontestable. We assume, but cannot deduce from anything else if it is not granted, that memory refers to an actual past. For life, knowledge of the future is even more necessary than knowledge of the past; and this requires additional presuppositions. We have to presuppose that there is a future, and that inductions are valid for it. The presupposition involved in induction cannot be demonstrated to any one who does not accept it. Those who argue against the existence of the external world, however, agree in the recognition of inductions so far as they apply to our own past and future consciousness; and they do not stop even here. As we have filled up gaps in the series of perceived events in order to bring the succession of our own states to regularity, we try to fill up the gaps that remain by assuming consciousness that is not our own. The validity of this induction too is allowed by opponents of the external world. By this hypothesis the regularity of events is made more complete; but it is not yet free from gaps. Sense-perceptions mostly break into the streams of consciousness of men and animals without apparent determination by uniform law in relation to the preceding contents of their consciousness.

Now the "external world" means for us the sum of antecedents we have to assume outside these various "streams". It is only one more assumption. It fits into the system formed by the previous assumptions; all of which, though not deducible from one another, are at any rate compatible: and it is so completely verified that its worst enemy cannot do without it in daily life. If it were only a "fiction," it could fully maintain itself on the ground of adaptation to purposes; but is it not more than a fiction? Is it not the most probable hypothesis?

As Dr. Becher foresees, the objection of opponents here will be, Is there, after all, any meaning in the assertion that there are external things in the realist's sense? Is there a definable non-phenomenal reality in the external world as such? So far as the world outside means simply a kind of regularity not dependent on us, but on which we depend, all admit it. The idealist assigns the ultimate explanation of it to a metaphysics of mind, but has no quarrel with scientific physics. Against this line of reply, partially expressed in Mill's definition of matter as consisting in "permanent possibilities of sensation," Dr. Becher puts the alternative: If the "possibilities" are permanent existences, they form an external world; if they are only in our representation and not outside our consciousness, they are not antecedents, and cannot satisfy the need of regularity (p. 80 note). Now this undoubtedly points to something beyond Mill, who stopped short of a theory of reality. According to the constructive idealist, the only way of giving reality to the "possibilities" is by a doctrine for which they have themselves something of the nature of mind. What are possibilities of sensation, regarded relatively to the phenomenal sequence of events, metaphysically stand for portions of an order that is in its own nature mental. Dr. Becher reserves the metaphysical question as to the constitution of reality as a whole; but, so far as he goes beyond Mill's position, his doctrine is not a return to the realism opposed by Mill or by Berkeley. He is a "realist" in a sense different from that of Berkeley's idealism only in so far as he recognises a sum of being not to be exhausted by all that could be said about the experiences, as Berkeley would have expressed it, of "spirits," whether divine or human or those of animals. Any notion we can form regarding the essence of the external world, must be taken, he admits, from consciousness. To say of anything that it "exists" can only mean that it has so much in common with the contents of my consciousness that if it were present to it it would be designated as "conscious" (p. 86). Existence is "quality," and conscious quality; but qualities non-existent in men and animals exist no doubt in the external world, and their modes of combination must be supposed different from that of the consciousness known to us.

The type of theory will present itself more distinctly on further exposition. First of all, there are in the external world existences

that are relatively perdurable; at any rate much more perdurable than our perceptions of them usually are (p. 102). Besides relatively perdurable existences, there are changes. In accordance with the presupposition of regularity, these are held to be "causal," in Hume's and Mill's sense of the term. That is to say, they are in fixed relations to antecedents. Also there are in the external world differences, both of the successive and of the simultaneous order. There is no ground for supposing the real external world to be spatial; but with the spatial differences of our manifold perceptions differences in the external world must be co-ordinated. To the different kinds of sense-groupings for sight and touch, since these associate themselves in the same order, there can be only one external world to correspond. Time, unlike space, the author would himself regard as "objective"; on the ground that to recognise "antecedents" presupposes their existence in a real order of succession. Besides difference, there is likeness between existences in the external world; and, especially in consequence of this, arithmetic is applicable to it. Perdurability and change, causality, difference and likeness are expressions of relations; hence knowledge of the external world is relative. If, however, the author's view be accepted as to the "objectivity" of time, knowledge of it, he concedes, both as concerning the external world and our own consciousness, must be called in a sense absolute (p. 114).

Bodies are to be asserted as something space-filling and perdurable; but this is said with the qualification made above in regard to space-relations. There is something corresponding to our conception, but this is not body as it appears. The result of a discussion of "substance" is that it has no intelligible sense as distinguished from all qualities, but may have one if taken to mean perdurable quality (p. 130). For the man of science, the substantial kernel is the tangible (p. 122).

From this point, we naturally proceed to the hypotheses of mechanical physics, which the author defends essentially on phenomenal grounds. To follow out any hint given of a metaphysical position is here, as he explains, no part of his object. While making it clear that the mechanical view is not necessarily a corpuscular one, he nevertheless devotes his chief care to the grounds of the corpuscular hypothesis, since this is the basis of modern physics. He has no difficulty in showing that the positions of physics and chemistry regarding hidden composition and movement are prepared for by verifiable inferences in practical life. Grained structure not at first obvious may be rendered visible and tangible; and perceptible vibrations may be made to combine and apparently pass into something that is not vibration. For the results of reasonings that are merely a prolongation of such common-sense inferences, the name of "fictions" is not the right one. There is no doubt an element of fiction in the models by which we represent the structure of matter; but the hypothesis that it has a

structure is not therefore to be regarded as wholly a fictitious imagination. Much that can be said about this structure ought to be called "probable hypothesis". The limits, indeed, of physical and chemical hypotheses have to be recognised. The mechanical doctrine works with the idea of masses in motion; but it must not be taken to assert that no qualities of elements save those that are thus expressed exist in the nature of things. The modern atomic theory does not, like the ancient, assert the absolute indivisibility of its elements. The chemical atoms have been proved to be only relatively indivisible; and the fate of the earlier atomic theory ought to warn us against supposing that we may reach a limit in the notion, for example, that the "electrons" now said to compose them are ultimate. The prospect opened out before science is an indefinite resolution of structure into something more minute. Again, the elements of matter undoubtedly fall into groups consisting of approximately like units; but it is compatible with the facts to suppose these units as much different individually as animals of the same species. Perhaps no two ultimate elements—if such exist—are absolutely alike. Empty space, the presupposition of the ancient atomic theory, is no necessary part of the new one. The discussions started on the question of "action at a distance" are still far from being scientifically resolved; and here least of all is dogmatism in place.

In all this, the exaggeration of phenomenism that would identify hypothesis with fiction seems to be fairly met. Imaginations of minute structure are within limits capable of direct verification; and even beyond these limits they are quite intelligible, and conceivably correspond to what might be seen or felt if our perceptions were magnified. This supposition, though Dr. Becher does not bring it out so distinctly as some idealists might desire, is itself purely phenomenal. Because a physical hypothesis does not give us metaphysical reality it is not therefore mere fiction. But how does it stand with the properly "realistic" part of his doctrine? Can we determine to any extent the ultimate "qualities" that make up the real external world? Do the most recent developments of physics bring us any nearer to determining them? Here the author takes a decidedly sober view. He gives a clear account of the new "kinetic-electric" as distinguished from the old "kinetic-elastic" theory of the transference of motion, following this up by discussions on ether and "action at a distance"; but has no determinate conclusion to offer. What he has to suggest in the end is a recurrence to possibilities when probabilities are no longer attainable.

A question he does not definitely raise is whether there are not limits psychologically assignable to the explanatory power of physics. May it not be that the properly "mechanical" doctrine is less capable of being transcended on the physical side than is supposed in some recent scientific speculations? Dr. Becher him-

self seems inclined to admit that some formulated conception of an "electron" can supply us with an explanation of "mass". Does not the nature of our senses show the impossibility of this? The electron seems unimaginable except as a small mass with an electric charge. Its "motion" cannot be anything but the motion, in the sense of transference, of such a mass. Thus it does not bring us to anything pre-mechanical. In physics, we cannot get beyond manipulating data of sense in an imaginative form; and the conditions of imaginability depend on our actual senses. Now a particle, of whatever kind, is an imagined object of sight and touch. As we have no special electrical sense, we cannot directly imagine in terms of electricity. Fundamentally, we are not carried beyond mechanicism as a scientific ideal.

To say this is to reinforce Dr. Becher's general position; for his principal aim is to insist on the element of permanent scientific truth in mechanicism. Of the limitations of this he shows himself fully aware. What he sets himself to defend is "mechanical physics" as a system of verifiable hypotheses; not a "mechanical view of the world" aiming at an ultimate explanation of life and mind. His philosophical doctrine, as has been said, presents itself as a kind of idealism. All knowledge, he perceives, has to be constructed rationally from a subjective base. There may be some interest in a concluding remark suggested by the order he gives for the series of presuppositions by which we construct it. As was seen, he finds that from the immediate data of consciousness we go on to reconstitution of our own past; then to prediction of the future on the ground of induction; then to belief in other streams of consciousness besides our own; and lastly to belief in an external world (whatever its reality may be). This is clearly the rational order from the idealistic point of view. Is not the historical order just the opposite? First, for human as no doubt also for animal consciousness, the feeling of resistance to effort suggests an external object; a little after this in development, though probably almost simultaneous, is the vague notion of other animated beings; next comes inductive inference to the future, with a practical aim; later, memories are referred to a determinate past (a more speculative problem, as Dr. Becher observes); last of all, the attempt is made to set "pure experience" free from all the assumptions and inferences involved in practical and scientific knowledge.

T. WHITTAKER.

L'Évolution Créatrice, par HENRI BERGSON, Membre de l'Institut, Professeur au Collège de France. Paris: F. Alcan, 1907. Pp. viii, 399.

A FRENCH critic has said of Prof. Bergson with some justice that it is inept to argue with him: you are either a Bergsonian or you

are not, and that is the end of the matter. For Bergson does not argue, or at any rate he argues only to refute and not in direct support of his own views, which he simply states with great eloquence and much wealth of metaphor. It is an unsatisfactory method. Not to give one's reasons is an excellent maxim for practice, but unsuitable to philosophy. The appeal is made to inner experience, and inner experience, unless it be very strictly cross-questioned, is like those polite but dangerous people who always tell us what they think it will please us to believe. Admirable as literature, the construction of this treatise is philosophically defective, and it becomes difficult for one who is not convinced of the value of all its main positions to disentangle the many subsidiary truths which are really valuable as well as beautifully expressed. And yet, when all is said, of all the blows aimed in recent years against the unhappy human intelligence—once so presumptuous and now so sorely discredited—Bergson's is, perhaps, the most forcible. The following analysis will give some idea of the purpose of the book.

The history of evolution teaches us that the human understanding has been developed as an annex of the faculty of action. Hence it is excellently adapted to think matter, but is incapable of comprehending life, of which it is but one among many emanations. The categories of our thought are suited to "solids," and science, so far as it deals with the inorganic, is more than symbolical and touches the actual; but these same categories are inadequate to life. The theory of life, therefore, needs a theory of knowledge to protect itself against the false claims of the understanding, whilst the theory of knowledge needs the theory of life to show the place of the understanding in the history of evolution. This theme of the inadequacy of thought to life, briefly stated in the Introduction, is more fully developed in the course of the book.

Chapters i. and ii. deal with the evolution of life and with current attempts at explanation of it. The fundamental contrast for Bergson is not between mind and matter, but between animate and inanimate, organic and inorganic. Our being is continuous change: duration, continuous process in time is of our essence. Each moment of our lives is a unique moment in a unique irreversible history, and so is an incalculable *creation*. The existence of conscious beings is a continuous process of self-creation. But the changes of material objects, at any rate within the closed systems isolated by science, are calculable beforehand; they can be repeated in time but they have no history; *i.e.*, time makes no difference to the inanimate. This is not true of the Whole, however,—it endures and progresses—nor is it true of living bodies, which are systems closed by nature and not by our artifice. They are individuals, and individuality comes from life; time affects them, for they grow and grow old. They must, therefore, be classed with the Whole and with consciousness, and not with inanimate matter.

Life, then, is creation, and the development of life resembles the

development of a consciousness: it is continuous, the result is incommensurable with its antecedents, the series is irreversible. But this is not recognised by those who attempt to explain evolution on the lines of either mechanism or finalism. We must accept the fact of transformation, but we cannot explain it either mechanically or teleologically. The mechanical theory is evidently inapplicable to a process of creation, for it assumes that all is given or calculable, that nothing really new occurs, that time has no efficacy. But teleology, if it means that evolution is the execution of a ready-made plan, involves the same assumptions, whilst if, as with some neo-vitalists, it means that each living being executes an immanent plan, it shatters on the fact that gross organisms are complexes of smaller. This criticism the author illustrates with great skill in reference to the special problem of the eye, asking how it comes that vision has been developed on two divergent lines of evolution, such as those of molluscs and of vertebrates, and arguing very forcibly that none of the current theories is able to answer the question. At the same time he admits that the Neo-Darwinians are most probably right in placing the cause of variations within the germ and not in the behaviour of the individual, though wrong in supposing germinal differences to be purely accidental; whilst Eimer is right in maintaining that variation is in determinate directions, though wrong in assigning only physico-chemical causes; and lastly the Neo-Lamarckians are right in believing the cause of orthogenesis to be psychical in nature, but wrong in assimilating it so closely to our individual effort. A profounder effort is involved, the single effort of life, or, as Bergson calls it, the *élan vital*. This life-impulse does not indeed aim at represented ends, but it has a direction, not calculable beforehand, but recognisable *post factum*, and inexplicable on any mechanical theory. So long as we regard only the complex structure, we cannot explain the analogous character of the eye of vertebrates and molluscs, but the function of vision is simple and not complex, and the complexity of the structure represents, not means employed by life in its "*marche à la vision*," but obstacles overpassed. "Life is before all a tendency to act on brute matter," and to be efficacious vision, like all perception, must be "canalised," so that the similarity of the structure occurring along divergent lines of development expresses a similar degree of attainment of the function.

But is this *élan vital* more than a name for a problem? Can we say anything positive of it? The author answers that if development has been along divergent lines, then the possibility of these divergences must have belonged to the original impulse, so that its character may be partly divined by taking a synoptic view of its actual developments. Just as the child contains the possibility of many men, so life at first contained the possibility of many directions, but unlike the child it has not been confined to realising only one of them. Its tendencies were from the first in unstable equili-

brium; it was like an explosive force, and it had to meet a resisting matter. The primal tendency was to grow, but living matter soon reaches the limits of growth and duplicates itself: hence the fragmentation of life into species and individuals. It is the business of philosophy (and the problem is philosophical and not scientific) to determine and appreciate the various tendencies of life, and combining them to get an idea of the "indivisible motive principle from which their *élan* proceeded". A complete interpretation, however, presupposes a complete natural history, and Bergson does not pretend to do more than sketch the general outlines of the scheme.

Life being creative involves an effort to graft upon the world of inorganic necessity the greatest possible amount of indetermination. But the life-impulse cannot create natural energy, and therefore has to use the potential energy of matter. To do this, it must form, so to speak, store-houses of explosives, of which plants are the purest examples. Yet in plants the life-impulse has side-tracked itself. It would store energy only with a view to active expenditure; but in plants the storing function has outrun the active function. And the same tendency to immobility shows itself also, though to a less extent, in the animal kingdom, for the life-force is limited and always inadequate to its task—always in danger of becoming stereotyped by its materialisations. It aims at the maximum of activity, but living beings aim at the least effort. Hence the tendency of species to become fixed, and the infrequency of continued advance. If the criterion of advance is success in developing despite all obstacles, then it is found only in two lines of development, that of the arthropods culminating in the hymenoptera and that of the vertebrates culminating in man—*i.e.*, on the route of developing instinct and on the route of developing intelligence. Vegetative torpor, therefore, instinct and intelligence are three elements which were in some sense united in the original impulsion and became dissociated as it grew; and it has been a fundamental error of all philosophy since Aristotle to regard them as successive stages of development, when they are really divergent directions of life.

Here we are launched upon a novel and important comparison of instinct and intelligence. Neither is ever found pure, for the dissociation of primal tendencies is never complete; but they are radically different in kind. Instinct, being at bottom one with the organising activity of living matter, is the faculty of using organs as tools, and even of making these organic tools. Intelligence is the function of a creature that has to manufacture its tools out of inorganic matter. Instinct deals with things and, if conscious, is so by accident; intellectual knowledge is of relations, and is essentially conscious. Its aim being the fabrication of material tools, intelligence is best adapted to deal with the solid, extended, and inorganic. Even here it subordinates accuracy of conception to practical utility, for extension is continuous, but we break it up into discontinuous fragments; solids are in constant movement, but we are interested

only in their positions, present or future, and have a clear conception only of immobility; and we are not interested in the actual forms of things, but in the possibility of decomposing and recomposing them as we will. But when it turns to the inner world or to any process of life our thought becomes totally incompetent; its stable concepts, its discontinuous form, are inadequate to continuous change. Hence intelligence cannot understand instinct. Science may translate instinctive behaviour into terms of intelligence, but those terms remain merely symbolic. Yet it is not altogether impossible to apprehend the nature of life. Intelligence cannot do it, but it alone can prompt us to the attempt, so that in a sense we could not do it without intelligence. What is needed is intuition such as belongs to the æsthetic faculty, but not, like the æsthetic faculty, confined to the individual. Such intuition, though it would not give us scientific knowledge, would grasp what science misses.

Life then is a psychical principle—not conscious volition, but more resembling a kind of effort or impulse, though no term of the ordinary psychological vocabulary is quite suitable to it; and (chapter iii.) the material world, though in one sense an obstacle resisting life, is in another sense its necessary means. If the law of degradation of energy holds good, then life may be regarded as an attempt to retard degradation by accumulation of energy, and only through this accumulation can it find actual expression. But after all the material world as we perceive and conceive it—ordered, spatialised—is not positive. The contours of the inanimate things that we perceive are the tracings of our possible movements; the spatial complexity and co-ordination of the world as science conceives it are the work of the intelligence. The Whole is really a flux, a becoming. But the intelligence cannot comprehend becoming or efficacious time, and materiality corresponds to privation of time. As spirit grows more intellectual, matter grows more material. The physical order and intelligence itself, therefore, are an arrest or inversion of the positive, forward-marching, order. The mechanism of our knowledge is cinematographic; we perceive and conceive matter as consisting of bodies possessing states and qualities, and then if we try to arrive at a reconstruction of movement, it is by taking a rapid series of instantaneous views. This is the only practical method, because our action is discontinuous, but when we pass from the world of possible action to the Whole, the stable spatial order vanishes, relapsing into the original flux, which is not disorder, but an order other than intellectual.

This dry analysis does no justice either to the author's facility in simile and metaphor or to his unusual power of combining excellence of style with extreme compression, but it will perhaps have made clear the general trend of the argument. To a layman, the criticism of biological assumptions appears to be a very successful summary and extension of criticisms which biologists themselves have increasingly felt and expressed in recent years. But the positive doctrines

of the book are less convincing. The author has been misled in the first place into the common view that language (and therefore thought) was directed primarily to material things, and has only later, by a process of torture, been applied to the spiritual. But this is a mistake. While material and spiritual are still undistinguished, attention cannot be directed more to the one than to the other, and when the distinction has been drawn, the limitations of language are not confined to one side: if it is true that many terms now applied to the psychical have been drawn from the physical, it is no less true, *e.g.*, that at the base of the meaning of every active verb is a peculiarly psychical experience. Surely the history of science and philosophy makes it plain that so far from the intelligence having been from the first directed and adapted solely to matter, physical science has had a constant struggle to rid itself of persistent modes of thought unsuited to matter.

Nor do I think that Bergson's view of the relation of instinct to intelligence is likely to win much acceptance. It is doubtless true that not all instinctive behaviour develops or can develop in the direction of intelligence, and it is not unfair to say that the passage from the one to the other has never been satisfactorily traced. Perhaps it cannot be traced now, but it would be still more difficult to trace the development of intelligence by itself, excluding all instinctive sources. It is not enough to say, as Bergson does, that instinct and intelligence co-exist: they interpenetrate and modify one another. Is perception an instinctive or an intellectual function? Surely it is always both, or sometimes one and sometimes the other, as one likes to put it; in other words the distinction is clear only in relatively extreme cases, and is not a distinction of ultimately opposed tendencies. Much the same holds good of the opposition of intelligence and intuition: though, no doubt, the scientific attitude may be fostered at the expense of the æsthetic (to which Bergson assimilates intuition), yet you do not make a man an artist by neglecting his education or increase his powers of appreciation by forbidding him to think.

Still more strange is the idea that in intelligence we have an arrest of the creative process, as if conceptual thinking had no volitional character. How can it be at once a primal tendency of life and an interruption of the life-order? Nor is it less obscure how the intelligence ever *touche quelque chose de l'absolu* if it is adapted only to the material order and the material order is not positive but a privation. Nor again am I easily convinced that the contours of Table Mountain or of the crystals that, as I watch them grow, take these or those determinate forms are merely the lines of my possible movements, though that is certainly part of the truth about them.

Lastly as to the inadequacy of thought to life. The argument that thought being a creation of life cannot understand life would have force, if at all, only supposing our knowledge that thought is a creation of life either is not intellectual or at any rate is not gained

by intellectual means (for otherwise the argument depends on what it proceeds to condemn), and supposing the conception of intelligence as an arrest of the movement of life to be valid. That life means creation, that therefore it does not admit of accurate calculation and prediction, is not reducible to rule, cannot as a whole be explained on the lines of mechanical theory,—all this Bergson shows forcibly and conclusively. But that therefore the movement of life is unthinkable he shows neither by argument nor by action, for indeed he thinks and says a great deal about it. That his language is so largely metaphorical does not lessen this difficulty, for even an unintelligible metaphor is a product of intelligence, and Bergson's metaphors, though frequently misleading and evasive of important problems, are not unintelligible. The plausibility of his view depends greatly on neglect of the intellectual element in perception, for at least we can perceive movement in the external world and, however we choose to name the process, we can apprehend our own volitional activity; and the terms movement and volition have a meaning, which is surely intellectual. After all physical science is not the only form of intelligence. But at the root of Bergson's polemic against thought is a demand which he does not express. He wants thought not merely to know but to *be* its object, and because it falls short of this he rounds and rends it, and calls it an arrest of the creative process.

On the difficulties raised by the conception of the Whole as a Flux it is unnecessary to dwell.

T. LOVEDAY.

Vorlesungen zur Einführung in die Experimentelle Pädagogik. Von ERNST MEUMANN, Professor of Philosophy, Münster i. W. Leipsic: Engelmann, 1907. Vol. i., pp. xii, 555.

THIS, with its companion volume, not yet received, will, in all probability, form the best summary of the aims and achievements of experimental pedagogy in any European language, and cannot fail to be of the very greatest service to all earnest students, both of Education and Psychology. That it is written by a Professor of Philosophy appears to indicate that Germany, though little influenced in theory, has been to some extent guided in action by the present world-wave of pragmatism or practical philosophy. Prof. Meumann, whose contributions to pedagogical science, largely hitherto in periodical form, are so well known to all serious students throughout the world, is now publishing in two volumes a number of lectures which will give a general account of the work done. When one has been oscillating between two conflicting desires, on the one hand to summarise the work already done, on the other hand to pursue researches of one's own, and has finally chosen the latter course, it is a source of the greatest pleasure to find the former task undertaken by one who is an acknowledged master.

There is no name that stands higher than the author's in work of this kind, and, were the English educational public advanced enough, the translation of this work would be profitable to the publisher as well as to the cause of educational science. Pending such a state of things one must do one's best to bring these lectures at least into academic notice.

Able men resident in universities are very suspicious of what is known as Child-Study. They describe it as pseudo-science—a collection of observations with lax methods by untrained observers who are prone to sentimental conclusions. It is only by work like that of the author that such opinions can be successfully combated; there is too much ground at present for such accusations. Prof. Meumann himself sometimes utters the mild reproof, A's or B's work "ist nicht sehr genau".

One more general consideration of interest—the lectures were delivered to the members of Teachers' Trade Unions in Königsberg, Bremen and Frankfort. It seems hard to conceive the members of teachers' unions in England inviting and attending such lectures.

Prof. Meumann explains, in a carefully written preface, that his book is an introduction in popular form to those pedagogical problems about which decisions are to be sought by experimental methods. It is not, he explains, a systematic pedagogy, not a system of knowledge. It is too early to set out a systematic pedagogy on the results obtained up to the present, and, the author continues, we ought not to attempt to do it; for we should be running contrary to the spirit of empirical research if we helped ourselves out with guesses and hypotheses. Yet he inclines to think that, before very long, such an attempt will be justified when a number of fundamental experiments now proceeding have been finished. The researcher always wants us to wait; when we get his results we shall be safe, he thinks: the systematiser always wants to systematise at once and points out, often truly enough, that the researches, though relevant, are little things. It seems to me that both workers may well proceed side by side, for we cannot hope for more than a transitory finality, if such an expression is permissible.

But whether this position be sound or not, we may at least agree with Prof. Meumann that Pedagogy, after a hundred years' neglect, has at last entered the scientific stage, but only entered, at least so far as England is concerned; it is not even yet a determining factor in English appointments in Education. We can hardly repeat for England Prof. Meumann's dictum that experiment *ist die Signatur der Pädagogik unserer Tage.* Unhappy indeed, he says, has been the fate of Educational Theory. It has been the chosen field of the dilettante and of the self-educated person. Of philosophers also; but of these, Locke, Leibniz, Kant, and he might have added Spencer, how many had in any way prepared themselves to deal with the subject on which they made such con-

fident assertions? It will not be by mere asseveration that Education will become a science, nor by the occasional divagations of men of science whose knowledge, say, is of physics or biology, and whose attitude is admirably satirised in the opening pages of Mr. Wells' *Food of the Gods*. But I am not quite sure that I am wholly in agreement with the author. He does seem to me too ready at times to set aside the philosophers and logicians to whom we owe whatever of rationalised work is now to be found in educational theory. All relevant ideas should be welcomed, doubtless, as provisional only; but, as there is no timeless or timeful eternity of truth for education, their provisional nature is not fatal. And it must never be forgotten that psychology, however experimental, cannot give us educational ideals.

How can physiology and what Prof. Meumann calls the external statistical method help us in all these inquiries?

We want help from whatever side it is offered, but there are difficulties which must not be burked. We can talk, if we wish, in terms of physiology, of cells and association fibres, and every effort should be made to find true parallels in the happenings of psychology and physiology. As long as we recognise that our talk is largely analogical and inferential, and that anatomical and physiological knowledge is not adequate to give solutions on pyschological points otherwise unknown, we are safe. How can we, for example, establish correlation values between a definite neural centre and a definite mental activity (p. 34)? We hardly, if ever, have but one of the two series before us in any definiteness; we may talk as much as we please of centres of this and that; but their physical growth in human beings is not separately observable in detail; in reality we always actually appeal to psychology, that is, to the mental activities in operation.

Unlike many experimentalists, the author fully recognises the unwisdom of piling up statistical masses of apparent evidence without, as a preliminary, striving to obtain a full and clear conception of the psychological units involved, that is, without a thoroughgoing analysis. He lays great stress on introspection, particularly in the discussion of the various forms of Association (pp. 218, 219). He thinks that the neglect of the inner connexions accounts for the conflicting nature of the results obtained by external statistical methods. Indeed he goes further than I should care to go in saying that a purely external method "hat gar keinen Wert"; perhaps because I hardly think any one can use, or has used, a method purely external.

A second chapter deals in outline with the general tasks of experimental pedagogy. It must ascertain the bodily and mental development of the child during the whole of school life; this knowledge provides us with one set of determining factors in Education, though it is hardly "das Fundament der ganzen Pädagogik". It involves a knowledge of the rates of development with varying ages and of

the correlations between bodily and mental growth. We shall thus definitely rid ourselves of the conception current in older pedagogy that the child is merely an adult on a smaller scale. We must study, too, the growth in the separate functions of perception, ideation, memory and thought, treating not of the child merely, but of the school-child, the child working in the school. Then we must deal with the economics of school work—how to produce the greatest result with the smallest outlay of teaching; and finally, with the relations between work done at home and in the school.

A third chapter traces the general bodily and mental development of children, and the fourth, fifth, sixth and seventh chapters treat of the development of the separable mental activities in children. These chapters constitute both in bulk and importance a very integral part of this volume. It is impossible in a short review to deal with all the excellent work here quoted and summarised; but I can hardly pass on without one or two references in more detail. The treatment of Memory is full and clear, but some of the experimental workers quoted have mixed up classes of pupils in very different stages of mental proficiency; and some of the results are very doubtful. The fourteenth and fifteenth years are said to be relatively weak for memory and the ages between ten and twelve the best. These are Russian results. It seems ungenerous, when one has learnt so much from a book, to suggest that it might contain more, but the omission of all reference to the work of the Chicago Bureau of Pedagogical Research is regrettable. There are points, notably those concerning the growth of memory with age and ability, on which the Chicago results would have been very relevant. Moreover, they would yield valuable corroboration, on a wide scale, of the author's own conclusions. The Chicago workers find no special memory age, but a gradual rise in mnemonic power with age and ability.

The whole of this chapter on memory is very valuable just now, when it is customary in scholastic circles to despise memory as a very Cinderella of the faculties. The phrase is, I think, Prof. Thorndike's and is very apposite, except that this Cinderella has few set tasks given her to perform. Prof. Meumann asserts, and I heartily agree, that the positive relation between memory and general mental proficiency is very striking (auffallende). He speaks very critically of the opinion that the child's memory is superior to the adult's; the child requires more time and more repetitions than the adult, he says. There is, of course, a falling off, after maturity, in the power to learn new and disconnected facts; but this incapacity must not be regarded as a characteristic of anything except the commencement of the disabilities of age. Shall we trust then to pure time and space memories when we can get our work done with understanding? Certainly not, yet we do not say that the child must be taught nothing he cannot understand. Must we postpone subtraction till he can understand the general mathe-

matical principles underlying it? Must we postpone Shakespeare till he knows all the meaning of the words? Prof. Meumann rightly moderates these extremists, quoting Pestalozzi, "Man muss nur nie denken, weil das Kind von etwas nicht alles versteht, so dient ihm gar nichts davon" (p. 265).

In the next chapter there is a discussion of the vexed question as to Association by Contiguity and Similarity (pp. 216, 217). I can scarcely think that German teachers are so competent psychologically, that accounts of this sort are really helpful to them. In another place the critical remarks on some nomenclature of Ziehen's may be more confusing than helpful. They can hardly be lucid to teachers, I should suppose, unless more copiously illustrated. The illustrations indeed constitute the science just as truly as the conclusions do. And, perhaps, it may be appropriate to venture to express a thought which, though mainly subconscious, has been surging up in my mind from time to time whilst reading this big book. Why not begin educational psychology with teachers, not by means of lectures, but with the simple experiments of the schoolroom? The teacher's object is not the acquirement of psychology as a critical body of doctrine but as an experimental study of his own school problems.

Then the author deals with individual differences in school children. What we want to know, now, however, is not so much the minute differences between individuals, as what is true generally. I have myself been referred to as a person who wants each child taught separately—one child one teacher—according to his mental make-up, which, as is truly said, is not quite like that of any other child; and I believe the day will come when we shall make a mental diagnosis of children entering school, and at other times, and base our classifications thereupon. But at present, at least, we want to know more especially what is true for groups and classes normally constituted.

Educational legislation and educational therapeutics must be based on science, that is, on general truths, not on idiosyncrasies; and for us, not merely on normal groups, but on normal English groups. For there is one *caveat* which I must give to Englishmen who, I hope, will read this book. In default of published English work there has been a strong tendency here to adapt our educational methods to the psychology of German school children. This has been noticeably so in the uncritical adoption of the German conclusions as to mental fatigue. There is no reason for us to adopt the alarmist tone displayed by some, at least, of the German researches. Our results, and, be it said, Prof. Thorndike's in America, are quite different; mental overpressure with us is practically non-existent, at least, in elementary schools; I can speak with no confidence as to secondary schools. There is no doubt at all that this is not the only German conclusion which is not applicable to our own schools.

There is no word in matters scholastic which is used more readily by inspectors, who are often sorely put to it for adjectives of general application, or by teachers who retreat into indefiniteness as a protective device, than the word Intelligence. The Anthropometric Committee of the British Association, in drawing up a list of mental characters for use in schools, definitely and purposely excluded it. Prof. Meumann (p. 522 *et seq.*) does something to clear up the connotation of the word. We have not yet estimated it in a quantitative way, he says, but that is not to be wondered at, for we have not yet decided what we mean by that higher development in children, apart from perceptual accuracy and manual dexterity, that we call by the name of intelligence.

Are the differences between the intelligent and unintelligent child differences in kind or in degree? Is intelligence, as Ebbinghaus says, the power to form new and original combinations? The author thinks the difference is a difference of degree only and that intelligence is by no means simply an excess of associative power. A witty man, he says, does not add to our knowledge, though he is facile in new combinations. And, in any case, only that man can be original who can cut himself loose from current associations. There are the critics and the systematisers, predominantly analytic and synthetic; but the highest grade of intelligence possesses great powers of both analysis and synthesis. One experimenter says children are predominantly associative. Prof. Meumann thinks, however, that his conclusions may depend on the nature of his tests. To all this I offer two considerations. Firstly, that the decision as to the nature of what is called intelligence in the child is to be sought for in the mental work of the child himself. Secondly, that the greatest factor involved in the general term intelligence is here omitted, namely, the apprehension of relevance. Intelligence is purposive; association and disassociation by themselves go for little; they must occur within the conative track. They can occur outside, but this is the play of fancy, and not a knowledge-making power.

An interesting appendix on physical measurements (p. 529) gives some valuable statistics of growth. Children of a higher social class are bigger than those of a lower one—this conclusion is true for England too, as was shown a year or two ago, I think, at Liverpool and Bradford, and in the last annual report of the London County Council's Medical Officer (Education). Whether this is due to an eugenic difference or an environmental one is not determined.

Many of the special problems of school method in different subjects are left to a second volume which I, for one, look forward to with pleasant anticipation.

W. H. Winch.

Unsterblichkeit. Eine Kritik der Beziehungen zwischen Naturgeschehen und menschlicher Vorstellungswelt. Von HERMANN GRAF KEYSERLING. München: J. F. Lehmann, 1907. Pp. 349.

COUNT KEYSERLING is already favourably known as the author of a work, *Das Gefüge der Welt*. Within a comparatively short period he has followed this up with the present treatise on Immortality. Plato's remark that there is much sceptism in things which concern the soul is still true, and any one who boldly tackles this subject is more sure of finding critics than followers. The present writer disagrees with a great deal in the book, but it is a work of distinct ability which may be read with profit. The author is exceedingly well informed and is full of ideas: he writes clearly and often eloquently, and he has the saving grace of nearly always being interesting.

Keyserling's method is good. He does not offer us a rigidly restricted discussion of one theme; he rather approaches the central point from different directions, and by evidence drawn from closely related fields of study strives to cast light on the main problem. A short introduction is followed by a chapter on "Belief in Immortality in General". He notes how widespread is the belief in the lower culture that the dead somehow continue to live. But he likewise points out how great differences of meaning and value are attached to the word 'Immortality' by various races and ages. In ancient Greece and Egypt, in India and among the early Christians we find a diverse significance given to the term. Yet behind the varieties of idea the writer sees the common tendency to believe that the life-principle is not exhausted by its temporal and spatial existence-form. Keyserling then goes on to discuss "Ideas of Death". In itself death is no transcendent problem, we are told; it is a physiological regulation. Life, here and now, has its form through limitations, and without these it could not exist as such. Death is the breaking down of these limitations, but it does not touch the essential principle of life. In his next chapter, "The Problem of Belief," the author begins to develop his own theory in a positive way. Premising that a criticism of the belief in immortality presupposes a criticism of belief in general, he proceeds to examine the nature of belief. Two misunderstandings must be avoided. Faith may be described as not-knowledge or knowledge-not-yet. In truth faith is the supreme and final presupposition of knowledge. In attributing to Kant, however, the view that faith is simply the negation of knowledge Keyserling does him injustice. The second misunderstanding is the confusion of faith with the idea or content of faith, a point on which much stress is laid. Hence faith in its essence is construed as a purely formal function. Still belief must refer to something—it is an act which affirms being—the existence of the presuppositions of life and knowledge which lie

behind all proof. This belief is an intuitive act; it is not a judgment but the basis of judgment. The being of the subject and faith in the object are correlates. "Faith is the unique function which stands in immediate relation to being, and we must believe in the self, because, as the presupposition of all psychical phenomena, it is more certain than anything capable of proof" (p. 120).

This theory of belief greatly influences the writer's conclusions, and yet it is very open to criticism. The postulates of knowledge are matters of faith, and it is true that faith as a psychological state always posits the reality of its object. But it is not true that psychological belief is a guarantee of epistemological validity. The postulates of knowledge are tested by the way in which they work as a support of knowledge and practice. Nor can I think that belief is prior to judgment and is its ground. All that we can say is prior is a mere awareness, the natural tendency of which is to pass into a judgment, and only when it does so is there belief. Ignoring this, Keyserling separates the form from the content of belief, and declares that the pure form or function gives immediate certainty of existence. So he is able to regard the psychologically motived judgments of faith as secondary products, and the ideas involved as of inferior value. This separation of form and content is inadmissible, and a faith which has only being for its object is valueless. Belief *that* God is, apart from a determination of *what* he is, is futile. Even the valid belief which the writer finds underlying the notion of immortality is something more than the mere assertion of existence.

As may be inferred, Keyserling does not hold that faith in its formal function can guarantee any of the ordinary ideas of immortality. He maintains, to our thinking wrongly, that we are *immediately* conscious of the *I* as function, power, and limitless activity. In this feeling of persisting power lies the germ of the instinct of immortality. But false accretions have gathered round the idea: these he boldly clears away in chapters on "Duration and Eternity" and "Consciousness," and some suggestive points are made. Briefly the result is this. Deeper than the empirical *I* and not identical with it is the fundamental *I* or Entelechy, man's true form. This transcends limits of space and time, and consequently transcends personality. Consciousness is secondary, a means, and not the essential in life. Not in this inconstant product but in the vast underlying activity resides the meaning of life. Keyserling assumes, and here we think he is wrong, that meaning and value do not necessarily imply a personal and conscious interest. In a chapter on "Man and Humanity" he develops the idea of a supra-personal unity—the system of connexions involved in the social order—which dominates and gives an end to the individual. And he tries to show that the higher and more efficient the system the more impersonal become the agents, the more is the person treated as a means. The one-sidedness of this is obvious. If personality is ultimate, he asks,

how explain the total sacrifice of the person for high ends? The answer would seem to be that, where such sacrifice has ethical value, it is always in the last resort directed to an increase in the personal values of life, not to subserve a supra-personal synthesis. The chapter on "The Individual and Life" is remarkable in showing the writer's familiarity with biology and his skill in using it to fortify his own position. He certainly makes clear how difficult, in the face of biological facts, is the standpoint of those who treat what is called individual as a self-centred and impervious entity. The main point, however, is the attempt to bind together the natural and spiritual realms, material and psychical unities, under the conception of nature or life. Keyserling boldly asserts, but signally fails to prove, that there is no essential difference between the teleology of nature and the teleology of the ethical will. The ethical, he says, only differs from the natural order in being a *conscious* endeavour to carry out the meaning of nature. Life is the ultimate principle, and it cannot be exhausted in forms of thought. Its movement is ever towards an order or synthesis which is impersonal. Man then is immortal; but it is the immortality of an essential life which is free of the trammels of personality and consciousness. *Sentimus experimurque nos eternos esse*, so said Spinoza: "No theory can refute this experience," adds Keyserling. The question remains whether the 'experience' embodies a value which can evoke either human interest or sympathy.

We had noted points for discussion in the last chapter on "The World of Ideas," but we cannot claim further space. Though we cannot endorse either the arguments or the conclusions of this book, it is none the less a very vigorous and interesting piece of work. The extent of the author's reading, both in science and philosophy, is noteworthy. Count Keyserling is quite a young man, and if he continues to devote himself to philosophical study a good deal may be expected of him.

GEORGE GALLOWAY.

VII.—NEW BOOKS.

Apollonius of Tyana and other Essays. By THOMAS WHITTAKER. London: Swan Sonnenschein, 1906. Pp. 211.

THIS is a collection of essays, six in number, by Mr. Whittaker, the historian of Neo-Platonism, dealing respectively with 'Apollonius of Tyana,' 'Celsus and Origen,' 'John Scotus Erigena,' 'Animism, Religion and Philosophy,' 'A Compendious Classification of the Sciences' and 'Teleology and the Individual'. All the essays, whether historical like the first three, or 'constructive' (to use Mr. Whittaker's own word) like the last three, are dominated by one thought, which finds perhaps its most striking expression in the opening sentence of the essay on Erigena. "Whenever the time shall arrive for a final estimate of the doctors of Latin scholasticism, the compassion expressed by Dante for the virtuous and philosophic heathens whom he saw in Limbo, will be transferred to them." The true 'times of ignorance' are for Mr. Whittaker those of the predominance of Christianity. In his view Christianity is one of the "most imposing and terrible manifestations" of the religion inspired by the Messianic ideal, the ideal, that is to say, of a priest-king exercising world-wide dominion, a religion which is by its nature the implacable foe of political and intellectual freedom. In the form of Orphism this type of religion had almost overwhelmed Greece "at the opening of its great period," but, fortunately for the future of civilisation, had failed to do so, and, by its failure, had permitted the establishment of those conceptions of the republican state and of liberty of philosophising, which, although latent throughout the period in which the Christian hierarchy was dominant, have retained their vitality and, reviving in modern times, have "gained a larger scope in the world of to-day".

Mr. Whittaker is prepared to deny, if we understand him, that Christianity has contributed anything to civilisation beside the preservation of certain elements of culture, in themselves alien to the religious system with which they came to be associated. The philosophical theology of an Athanasius or an Augustine is a 'pseudo-synthesis' 'entirely without human value' (p. 51). There are no doubt 'gleams of borrowed light in their Kingdom of Darkness,' but the view of Comte 'that the Catholic ideal, as one expression of the "human providence," must have been a progressive phase in the history of humanity,' is uncompromisingly rejected (p. 52). The best that can be claimed for it is that it has served as an 'obstacle posited by the world-soul in order to rise more explicitly to the idea of spiritual freedom'. The period of its ascendency was but a night or winter of the spirit. Yet it is admitted that Christianity had the merit of preserving in its sacred Scriptures 'elements of ethical culture which, when cleared of their dogmatic superstructure, could be seen' by thinkers like Spinoza 'to contain something emotionally unique'. 'In the Hebrew prophets there is a more ardent, though not a purer and certainly not a nobler, morality

than that of classical antiquity even in its final stage; and the teaching of the Gospel has become, when dissociated from a creed which was always extraneous to it, the inspiration of a more impassioned, though not of a wider, philanthropy.' This teaching, 'distorted beyond recognition in its association with the ecclesiastical system,' may be described as 'the teaching of Jesus,' though Jesus is for Mr. Whittaker a purely legendary personage (p. 53).

It must not be supposed that I regard Mr. Whittaker's position as unassailable, because I do not attempt within the limits of a short notice to estimate the true debt of humanity and civilisation to the Christian religion, theology and Church. Christian apologists have sometimes seemed to attribute to Christianity by itself apart from other spiritual forces much that has been due to it only when combined with these; it would be no less a mistake to attribute to them apart from Christianity what they have only produced in combination with it. The determination of the share in the complex result either of the original Gospel of Jesus or of the Messianic religion which was so early, if not at the very first, associated with it, would need a very careful inquiry; and it is always to be remembered that into the constitution of Christianity, in the sense of the religion of Christendom, had entered many other elements—Greek philosophy among the most important—which while other than either of the two above mentioned are not therefore alien to the historical Christianity which results from their interaction with those two. But I may venture to suggest that Mr. Whittaker's account of Christianity as a religious system is one which a 'practising Christian' (to use a Gallicism) will refuse to recognise as just, not merely because it is unfamiliar and hostile, but because it is onesided and external. I do not know how far one would be right in suspecting a certain connexion between Mr. Whittaker's deficient knowledge of the Christian religion from within and his scepticism as to the actual existence of its reputed founder.

Mr. Whittaker, however uncompromising in his condemnation of historical Christianity, always writes with dignity; and his high seriousness keeps his criticism, severe as it is, free from anything which should cause offence to any reasonable man, no matter how deeply attached to the system which Mr. Whittaker rates so low. His fair-mindedness is conspicuously shown in his very true remark (on p. 203) that Berkeley's 'theological purpose never caused any deviation in the logic of his thinking'. Berkeley has not always obtained so much justice at the hands of critics far less unsympathetic with his theological position. Mr. Whittaker, when speaking of Berkeley, makes an interesting suggestion as to a possible Leibnitzian development of his idealism which should render it less incongruous with our belief in continuity in nature. I doubt however whether the real edge of the difficulty involved in the doctrine that the *esse* of external things is *percipi* can be turned by the supposition that a percipient 'spirit' (in Berkeley's sense) is connected with many things which Berkeley did not hold to be animated by any such. This doubt might be raised and discussed sufficiently in reference to human bodies without proceeding further. The *esse* of a human body does not less consist for Berkeley in its being perceived because of its close association with a human spirit.

Mr. Whittaker's last essay on 'Teleology and the Individual' exhibits him as taking a view which has much in common with Dr. McTaggart's; and we may suspect that the 'pluralism' (so to call it for the moment) in the systems of both thinkers is connected with an agreement between them in finding no need for *worship* in religion. Dr. McTaggart expressly holds worship not to be a fundamental need of the spirit;

while yet it would be quite incorrect to deny to his ultimate synthesis a religious character. Those who think otherwise of worship will not be able to accept the philosophy of religion offered either by Dr. McTaggart or by Mr. Whittaker.

C. C. J. WEBB.

Pioneers in Education. I. Rousseau. II. Spencer. III. Pestalozzi. IV. Herbart. By GABRIEL COMPAYRÉ. London: George G. Harrap & Co. Pp. 120-140. Price 2s. 6d. each vol.

Each of these monographs is by the well-known historian of Education, M. Gabriel Compayré, and forms a neat little volume of 120 or 140 pages. The translation has been well done by R. P. Iago and Miss M. E. Findlay. On page 12 of the Spencer it is stated that he published *Social Statistics* in 1850. Probably '*Statistics*' may be an overlooked printer's error for 'Statics'.

The aim of the series is to represent each of the great pioneers of educational progress as he lived and worked; second, to give his historic setting and show him moving among the tendencies of his epoch and the educational conditions of his age; third, to bring old ideas face to face with modern needs and opinions. These volumes admirably fulfil their purpose. They enable the reader in each case to see the man in relation to the movement, and to appreciate the immediate and the permanent value of his work. M. Compayré is eminently fair in his criticisms, and may be trusted as a guide through the conflicting theories and systems. A student who reads these books as part of his study of Spencer or Herbart, will not be carried off his feet by either of them, but will have a clearer and worthier estimate of the value of each master's teaching.

Rousseau opens this gallery of portraits, and rightly so. He was "the originator of the modern movement," the 'leader and inspirer of most of the educators who came after him'. Reformers in education, as in other matters, succeed in so far as they are able to give effective vitality to the new spirit which is brooding over the face of the intellectual and social waters, and secure for it suitable embodiment in a book, a code or a system. Rousseau is the voice of democracy demanding freedom and naturalness in a world of conventionality. At the same time he is to some extent the substance of his book. "What Rousseau would fain have been and was not, Émile is to be." M. Compayré brings out clearly the great debt that modern education owes to Rousseau; at the same time he has a keen eye for the faults and weaknesses of Émile's training. Like Plato and Aristotle, Rousseau tended to lose sight of the true unity of the human being. He broke up growing life into sections, and forgot that Education must take account of the simultaneous evolution of bodily and mental powers. On the other hand, unlike Plato and Aristotle, he tried to get the perfect *individual* man without realising the absolute necessity of a social training.

In Spencer we have "a full and clear exposition and enlargement, an orchestral setting of themes borrowed from Émile". The inspiration of Rousseau is evident, though unacknowledged, throughout the whole of the famous Essay on Education. The main difference is that now for the first time the idea of evolution affects the statement of the aim and the method. The great credit of Spencer is that more definitely than any of his predecessors he insisted that Education should be scientific. Here we do not mean his apotheosis of the sciences as necessary subjects of study, but his implicit and explicit demand that scientific knowledge of body and mind must be called in to guide the educational process. In

criticising Spencer's views about the prime importance of the sciences as subjects of study, M. Compayré, among other acute remarks, makes it clear that Spencer, when he sneers at "the fanaticism of instruction," contradicts his own main position, and by denying that knowledge has any beneficial effect on conduct, implicitly asserts the inefficacy of science as an instrument of moral education.

Every system of education implies a philosophy. Pestalozzi, with all his enthusiasm and saintly zeal for primary education, failed to reach a system because he had not grasp of mind enough to formulate for himself a philosophy. Yet his failures were fruitful successes. His continual insistence on "intuition" as the absolute principle of knowledge has made the elementary stages of instruction in all civilised countries much more efficient. He is the apostle of the perceptual stage of intellectual education. "How many processes, now familiar in the schools, were initiated by Pestalozzi!" Even modern geography owes much to the simple-minded enthusiast. "Pestalozzi," said Carl Ritter, "did not know as much geography as a child in our primary schools; it was, however, whilst talking to him that I felt the impulse toward natural methods awaken in me."

The close relation between a system of education and a philosophy is nowhere better seen than in the case of Herbart. One outcome of his philosophy is that the understanding is held to be the principle of the will, and that actions therefore conform to ideas. There is thus no real separation between intellectual and moral education. According to Locke and Spencer instruction counts for little in the making of character, but according to Herbart instruction is of fundamental importance. On modern lines Herbart reasserts the ancient doctrine "Virtue is knowledge," and stands for the principle of education through instruction.

The summary of Herbart's psychology and philosophy is clear, and the criticisms are pointed and just. Yet in spite of the weakness of his psychology and ethics, Herbart is given a well-deserved place in the first rank of educators. He exalted the function of the teacher, and looked upon education as a sacred mission. "His work stands as one of the most powerful efforts ever put forth to introduce into the art of education the spirit of philosophy and of science."

JOHN EDGAR.

Psychology. General Introduction. By C. H. JUDD. New York: Scribner's Sons, 1907. Pp. xii, 389.

This is 'Volume one of a series of text-books designed to introduce the student to the methods and principles of scientific psychology'. It aims at the development of a functional view of mental life, adopting the genetic method of treatment and giving 'to the physiological conditions of mental life a more conspicuous place than has been given by recent writers of general text-books on psychology'. The author also endeavours 'to make as clear as possible the significance of ideation as a unique and final stage of evolution'. The first 130 pages are indeed well suited to this purpose. Here the student will find a simple introduction, two clear and useful chapters on the nervous system and excellent chapters on the sensations, with good illustrations. There are, according to Judd, five kinds of mental processes: sensation factors, relations between sensations, attitudes (feeling, interest, attention), memory contributions to experience and ideational relations. The latter half of the book is, for the most part, devoted to the exposition of the

general theory of the author, that all the unity of experience in general and of the various sensory, affective and volitional complexes, in detail, is dependent upon the unity of motor processes, not as such, nor as represented by the peripheral sensations aroused by them, but purely as central connexes, binding sensory or rather afferent processes together and leading them over to efferent processes. The unity is not on the afferent side, as has been thought usually, but has, according to Judd, to be placed a little further over the nervous arc, nearer the efferent side. Physiology has, of course, been throwing important light upon the function of the 'final common path' of late years, and Judd seems to see in this new point of view a welcome refuge from the difficulties of the old theories of the elaboration of sensations into complex experience. Hence the prominence of physiological speculation in this introduction to psychology, "Language is so important a form of activity that human consciousness may be said to be determined in general character and especially in its types of organisation, more by the ability to respond to impressions by movements of the vocal chords than by any other motor ability whatsoever" (p. 193). Even feeling is based on the unity of motor processes. "The feeling is not a content factor, as are the noise and the printed words; it is rather the experience of a restless wavering between contents. It is 'the characteristic consciousness of inability to settle down to one kind of attention'; it is an attitude of effort to secure an adjustment which seems to be just beyond reach" (p. 197). "The physiological conditions of both the organisation of experience and its feeling-tone are the same" (p. 204). "There can be no question that the ability to produce vocal harmonies through muscular activity often stands in the closest relation to the ability to appreciate sound harmonies" (p. 211). "Indeed the suggestion made by these two writers [James and Lange] is so productive that the present difficulty in describing the conditions of feelings is of an entirely different kind from that which existed at first. We have been led to recognise that not only feelings, but a great many other phases of experience, are related to bodily activity and are explicable in terms of activity rather than of sensation. The difficulty now is, not in believing that feeling is directly related to activity, but in finding out what particular characteristics of motor organisations will explain the special characteristics of the different phases of consciousness which are related to activity" (p. 196). Doubtless that is the difficulty, and one can only sympathise with the author in it. When we come to ideation, the problem seems to become still more complex. "The value of words lies in the fact that they carry experience forward, furnishing only so much content as is necessary to support thought without overloading experience with all the detail. . . . If we use such a word as 'savage,' we are likely to take an attitude of superiority somewhat analogous to that taken towards the animals, but flavoured more than the former idea with a concession of equality. Again, if we speak of higher things, such as angels, we assume an entirely different attitude, without necessarily giving ourselves the trouble to fill in any definite content." "General ideas are in essence nothing but dispositions toward activity" (p. 268), with "something of development toward direct motor habits" thrown in.

It is unnecessary to assail this theory actively in its details. It is another of those theories which attempt to stitch mental experience together out of a vast number of sensation-patches. The variant on the old way is here, that the patches are not sewn together at the edges and do not ruffle one another up into proper position, but that they somehow get hitched to the ends of single motor strings or sets of these. When the right string is pulled, up comes the right experience, which is all that

it is, only because it is in the way of coming up in one piece. But the days of such theories are well-nigh counted. Let an 'attitude' suffice for the reader. Judd's theory can only be regarded as a piece of special pleading, totally unsuited for the use of students in a general introduction to psychology. They will not understand it, because they cannot see it in its proper perspective. They could only use it as accepted creed, as they probably would. An introduction should surely contain some record of the facts upon which induction is based in such fields as memory, ideation and language, and some account of other theories than only the author's.

H. J. W.

Plato or Protagoras: being a Critical Examination of the Protagoras Speech in the 'Theætetus' with some Remarks upon Error. By F. C. S. Schiller, M.A., D.Sc. Oxford: Blackwell, 1908.

Mr. Schiller's main thesis is, briefly, that the *βοήθεια* which Plato puts into the mouth of Socrates in the *Theætetus* (166 *a*-168 *c*) is, in substance at least, the genuine *λόγος* of Protagoras. This he infers mainly from the fact that Plato never refutes it in the subsequent course of the dialogue. This seems to show that he did not fully understand it. Now Mr. Schiller is clearly right in maintaining that the position taken up in the speech is never refuted, and it was well worth while to call attention to the fact; but his inferences from it appear to rest on certain historical assumptions which are untenable. In the first place, there is no reason for holding that Plato was bound to "refute" it. Mr. Schiller's view of the purpose of the dialogue is that Plato has made Protagoras "into a stalking horse in his campaign against his own professional rivals, the Sophists". Who were these? The only man that can be called a professional rival of Plato in any sense is Isocrates, and in his circle the term "Sophists" was applied to Plato himself and his friends. Mr. Schiller himself condemns "the invention of imaginary Protagoreans" as a desperate expedient, and I have no doubt he is right. We have to do here with an illusion which is the direct result of Plato's consummate dramatic art. We keep forgetting that in these dialogues Plato is dealing with the past. There may be nearly three generations between the date of the *Ἀλήθεια* and that of the *Theætetus*.[1] In the second place, Mr. Schiller has to assume that the work of Protagoras no longer existed at the time the *Theætetus* was written, and that Plato is reproducing his argument from memory. This is connected with the anecdote of the condemnation of Protagoras and the public burning of his book which is narrated by "Diogenes Laertius" (ix. 52). Mr. Schiller becomes pathetic over this instance of successful persecution, but the story is in a high degree doubtful. At least, I do not see how it is to be reconciled with what Socrates tells Anytus in the *Meno* (91 *c*). According to that, Protagoras was nearly seventy when he died, and had been a professional teacher for forty years, and yet no one ever discovered that he corrupted his pupils. On the contrary, during all that time and down to that very day, his reputation was unimpaired (*εὐδοκιμῶν οὐδὲν πέπανται*). But, even supposing that a few copies of the

[1] Mr. Schiller's statement that Protagoras's book was published in 411 (or 412) B.C. is based on a combination which no one now accepts. Protagoras was old enough to be Socrates's father, and his book must have been well known for at least a generation in 412 B.C. On the other hand, the *Theætetus* is probably not much earlier than 360 B.C.

Ἀλήθεια were burned to please the people, that would have no serious effect. At the very worst, fresh ones could be got from Thurii or Abdera. The discourse of Anaxagoras, which was *bien autrement suspect*, could be picked up at Athens for a drachma at the outside long after his banishment (*Apol.* 26 *d*), and Plato assumes all through that the work of Protagoras was accessible to every one. The young Theætetus has read it "often" (152 *a*), and it is spoken of as a defenceless orphan which Protagoras had left behind to be insulted, because its natural guardians were unable or unwilling to protect it. As a matter of fact, Porphyry read it centuries afterwards, and quoted it verbally, though Eusebius, to whom we owe the information (*P.E.*, x. 3, 25), unluckily omitted to transcribe the quotations.

It is impossible, then, that the βοήθεια can be the argument of Protagoras himself, and Mr. Schiller's thesis falls to the ground. If we ask why Plato should have written the passage at all, the answer is probably that he thought Protagoras really meant something of the kind. On the face of it, he had merely intended to attack the mathematical and astronomical science of his day. In particular, the doctrine of incommensurables which arose from the difficulties of Pythagoreanism, and was treated empirically by Theodorus of Cyrene, must have seemed a futile thing from a "humanist" point of view. As it was just Theætetus himself who first gave a complete theory of the matter, I would suggest that the introductory part of the dialogue gives us the clue to the sense in which Protagoras originally used the words ἄνθρωπος μέτρον. The familiarity of the phrase is apt to blind us to the fact that it is not an immediately obvious way of stating the humanist position. Why "measure"? In the same way, the science of Southern Italy maintained that the earth was a sphere, but from a humanist point of view it was flat, "like a disc or a tambourine," as the atomists at Abdera continued to teach.[1] Plato, I fancy, was willing to believe that there was something more in the position of Protagoras than a mere revolt against science, and he has indicated in the βοήθεια what he conceived that something to be. And, if we ask why he does not refute it, the answer to that may be that Plato himself was more of a "humanist" than Mr. Schiller seems to suppose.

JOHN BURNET.

Thought and Things: A Study of the Development and Meaning of Thought or Genetic Logic. Vol. ii. *Experimental Logic, or Genetic Theory of Thought.* By J. M. BALDWIN. London: Swan Sonnenschein, 1908. Pp. xv, 436.

For reasons sufficiently indicated in the review of Prof. Baldwin's first volume (N.S., No. 66) it would be premature, and hardly profitable to attempt an estimate of the value of this work until it has reached completion. And as we learn from the Preface of the present instalment that "the third volume is writing but not written," it may be presumed that time and the volume will automatically bring about this consummation. Meanwhile it is instructive to see how Prof. Baldwin meets the critics who grappled with his first volume. This is his reply to those who desiderated more historical orientation: "There is nowadays, especially in English books, so much straining to justify one's views by recondite citations from Aristotle, Kant, Mill, and the prophets generally, so much disputation over what these worthies really meant, so much

[1] Λεύκιππος τυμπανοειδῆ (τὴν γῆν). Δημόκριτος δισκοειδῆ μὲν τῷ πλάτει, κοίλην δὲ τῷ μέσῳ.

of what seems to be not a hiding of one's candle in a bushel, indeed, but a losing of it in the searchlights of earlier time—that it may be a relief to readers to find a book in which conclusions and their reasons are simply stated for what they may be worth". Of course it may, though it may equally be that the reader will cavil no less at this claim than at the motto inscribed over the whole, and doubt whether he would have discovered either the 'simplicity' or the beauty in Prof. Baldwin's work, if he had not himself called attention to it. Certainly Prof. Baldwin's terminology, whatever its merits, does not obviously make for simplicity, except in the enamoured eyes of its author. He is indeed very proud and quite defiant about it. "As to the use of new terms—on that point, I simply take up any glove the critic may see fit to throw down" (p. 421), and he expresses his conviction that "if any of the views expressed in my work survive, the terms will 'win out' too; if the views do not survive, the terms may perish with them" (p. xi). One cannot but think that in this dismal prognostication Prof. Baldwin may be mistaken; it is to be hoped that for the views which he shares with other thinkers and for which better terms are already in existence—and their number is not inconsiderable—the best terms will survive, and that if at present there are no good ones, better ones will be devised. For, frankly, Prof. Baldwin's coinages are rarely happy: they oscillate between cumbrous Greek and unattractive journalese. But even this would not be fatal, if he would only stay to define them clearly and to motive their introduction adequately. As it is, they are too often sprung upon the reader without warning from sheer delight in technicality, and they seem needless, because their use is not made clear. Of course the matter is ultimately one between the writer and his reader, and the latter can always protect himself by declining to proceed with the former. But Prof. Baldwin runs serious risks of burying whatever is good in his ideas by the defects of his exposition, and he would in any case be well advised to add a final glossary to his third volume.

F. C. S. SCHILLER.

No Struggle for Existence, No Natural Selection: A Critical Examination of the Fundamental Principles of the Darwinian Theory. By GEORGE PAULIN. Edinburgh: T. & T. Clark, 1908. Pp. xx, 260. 5s.

The author of this book possesses a literary style much above the common, and addresses his task with very manifest piety and sincerity. Starting with doubts as to the validity of Darwin's exposition of evolution by means of Natural Selection, he comes at length, though a lifelong evolutionist, to "reconsider his views in regard to the doctrine of a material evolution from lower to higher forms of life". But he does not seem to be quite aware of how much the one contention is graver than the other, nor to realise that in denying the adequacy of the hypothesis of Natural Selection he has many biologists on his side, while in renouncing the theory of Evolution he parts company with the thinkers of his time. As Malthusian doctrines of population and subsistence led Darwin towards his theory of a struggle for existence among all creatures, so our author, retracing his steps, reverts from a criticism of Natural Selection to a discussion of the Law of Population. In this part of the work he adduces many interesting facts and statistics which we commend to the student, but we fail to follow the writer's argument or to be satisfied with the result at which he arrives. He attaches great importance to the law "That a man does not marry until he sees himself in possession of means that will enable him in his degree to marry"; and

he finds that, in the main through the operation of this law, "population does not tend and cannot possibly tend to increase faster than the means of subsistence". In short, in this best of all possible worlds, there is no over-population and no lack of subsistence, and (what is perhaps less open to dispute) there is always work for the competent.

The critic is not surprised to find running through the optimistic argument of this book a tendency to advocate protection and to deprecate free trade; but he is grateful to learn that protection, by increasing wealth and enlarging the demand for alien luxuries, tends not to isolation but to cosmopolitanism, and brings us the nearer to the federation of the world.

D. W. T.

Spirit, Matter and Morals. By R. DIMSDALE STOCKER. London: A. Owen & Co. Pp. 97.

This little book, in which Mr. Stocker dismisses the claims of Spiritualism, Materialism and "Rationalism" to furnish a satisfactory basis for human conduct, is not badly written. His own solution is "Rational Ethicism," which, while appealing to the imagination and the heart, identifies morality with the rational nature. The newest, and least desirable, thing about this appears to be the name.

D. M.

Einleitung in die akademische Pädagogik. Von Dr. HANS SCHMIDKUNZ. Halle a. Saale, 1907. Pp. 206. Price M.3.

There are not wanting signs in this country as well as in Germany that interest is awakening in the problem of extending pedagogical principles to the highest grades of teaching. In England and Scotland during the last ten years there have been many criticisms of the old lecture system in the Universities and in professional and technical Colleges. In the study of the sciences the laboratory has been counting for more, the lecture room for less. Demonstrations and lectures have become supplementary to practical work, instead of taking its place. Even in the study of languages and the various branches of philosophy old methods are being discarded or modified, and methods which demand mental activity rather than mere receptivity are being adopted. In teaching Classics, research is encouraged as well as in teaching Chemistry. In teaching philosophy it is now recognised that to hear lectures about a system of philosophy is not to become master of that system, still less is it to become a philosophic thinker.

The pedagogic task in elementary and secondary schools has for a considerable time been undergoing a process of methodical organisation, and is gradually being firmly established on a basis of scientific knowledge. We still need a higher practical and theoretical pedagogy, a theory and practice of University and Technical Education.

In this volume an attempt is made to lay down the main outlines of such a system. The author holds that pedagogy like every science is a criticism holding a place mid-way between the dogmatism which lays down hard and fast rules, and recognises no limits to its knowledge, and the scepticism which cannot believe that scientific knowledge has any guidance to give in the practical work of Education. The dogmatism was illustrated by some of the old-fashioned training colleges, the scepticism is seen in the recent confession of a well-known headmaster, "that like other secondary schoolmasters he is very sceptical of the value of psychology".

Academic pedagogy—or the pedagogy which seeks to find the true principles and the best methods of University and Technical Education—the pedagogy of Arts and Sciences—is not something different from or unconnected with General Pedagogy. As our author says, much may be learned from pre-academic and post-academic methods. Pedagogy is one—but it has its constants and its variables. It recognises stages of mental growth. It varies its practical methods not merely to suit the perceptual or the ideational stage, but to suit different types of individuals and all grades of intellectual advancement.

An analysis is made of the chief characteristics of Academic Pedagogy. Among these are "freedom of teaching and learning," "personal bias, and specialisation," "the traditions of research and production," "special study".

The chief 'forms' of the highest teaching are classified for full consideration. They are found to be: (1) Tutorial advice and supervision. (2) Lectures. (3) Practical work in the laboratory, or the literary or philosophic task taken up for study and investigation by the student. (4) Private study.

The author provides an excellent example of pedagogical criticism when he considers how far the well-known didactic maxims can be applied to the most advanced stages of teaching.

"From the easy to the more difficult," "from the simple to the complex," "from the objective to the subjective," "associate teaching with present knowledge and interest"—these and other maxims are carefully examined, and it is shown that—unless the terms are carefully defined—their converse would often be a more correct statement of true working principles.

The volume is enriched with an appendix containing many valuable notes and references, and the bibliography at the end shows that in Germany the subject has been steadily growing in interest.

It is worth reading by all who are interested in the question of securing the utmost efficiency in our highest educational institutions.

JOHN EDGAR.

Zur Religionsphilosophie. Drei Betrachtungen. Von HERMAN SIEBECK. Tübingen: J. C. B. Mohr, 1907. Pp. iv, 79.

In this brochure Prof. Siebeck has brought together three papers, entitled "The Progress of Humanity," "The Development of Religion," and "The Power of Nature and the Human Will". The first was originally delivered as a *Rektoratsrede;* the second appeared in the *Zeitschrift für Philosophie*, but has been revised and added to. Perhaps the most suggestive and valuable of the articles is the first. It was noticed at some length in MIND on its first publication (N.S., No. 6, p. 256), and it may suffice to indicate the main ideas. The meaning of history is not to be found merely in the process itself. The time movement has for background the eternal, and historical values point to transcendant values. Progress is always in terms of persons, and represents a vocation not an immanent and necessary law. The second paper opens with an appreciative sketch of Eucken's *Philosophy of Religion*, the main positions of which are sympathetically endorsed. Again Siebeck contends for the place of freedom in spiritual development. *Suum esse conservare* becomes here a conscious task which implies freedom. With the latter is given the possibility of sin, while natural evil is a presupposition of life. Whether the world is good or evil depends on our personal attitude to the world. In the last article Siebeck raises the

question of the relation of the intractability of nature to human life and endeavour. He finds it is involved in nature's uniformity, and therefore in the end a condition of human culture. The resistance nature offers is a stimulus to development, and its uniformity makes possible the realisation of values. Physical development has its worth in subserving spiritual and personal values, and these in turn have their ground and goal in a supramundane Good.

This is an excellent little work, thoughtful as well as spiritual in tone; and it may be commended without reserve to the attention of those interested in religious philosophy.

G. G.

Das Ohrlabyrinth, als Organ der mathematischen Sinne für Raum und Zeit. Von E. von Cyon. Berlin: Julius Springer, 1908. Pp. xx, 432. M.14.

This monograph of 425 pages is an exhaustive exposition of the physiology and psychology of the sense of space or of orientation. The study of the semicircular canals as the peripheral organs of this sense has been von Cyon's lifework, his thesis "Sur les fonctions des canaux semicirculaires et sur leur rôle dans la formation de la notion de l'Espace," having been published thirty years ago.

The results of the work of contemporaries is, however, everywhere acknowledged, the contributions of Mach, the metaphysician; Crum Brown, the chemist; Breuer, the practitioner; and Ewald, the physiologist, being all duly noticed, whilst the historical development of our knowledge as to the functions of the ear-labyrinth is fully but succinctly treated.

Chapter i. gives an account of the facts experimentally ascertained; chapter ii. describes the effects of rotations round various axes; chapter iii. deals with the development of our notions of space as dependent on sensory factors; chapter iv. is concerned with results of mutilations of the canals, and in particular with the behaviour of the Japanese "dancing mice"; chapter v. describes the illusions related to the stimulation of the canals; chapter vi. is entitled 'the physiological principles of the Geometry of Euclid,' while chapter vii. analyses our "sense" of time and our consciousness of quantities.

There are forty-five figures in the text, five plates, an index, and an excellent photogravure of the author.

A work like this illustrates very strikingly what modern specialisation in physiological psychology means.

D. F. H.

Die Wiedergeburt der Philosophie. Rede zum Antritte des Rektorates der kg. Un. Berlin, 1907. Carl Stumpf. Leipzig, Barth, 1908. Pp. 38.

Stumpf's inaugural address is a profession of faith in the philosophical Renascence of the last quarter of the nineteenth century. Starting from the acknowledgment, which place and date made natural, of the ethical inspiration of Fichte's century-old *Reden* to the German people, he asks why, when the moral fervour of the prophet Fichte still pulses in the life of his compatriots, his intellectual construction leaves them cold and unillumined. It is not a question of age, for Leibniz, older and no less artificial in his system, is in touch at many points—in some more so than even Kant—with living movements. It is that German idealism forgot that philosophy must be metaphysical in the literal sense, an aftermath

of science. In an age of scientific advance the system-makers swing to the other pole of speculation, mysticism. With Lotze and Fechner, each grounded in his scientific study, begins a new stadium of development. The education of a philosopher must, so Stumpf holds with Aristotle, include one science, and he can hardly concede that the historical sciences really satisfy the requirement, given the problems of the present. So, with well-chosen phrases and sound appreciations of some at least of the forces at work around him, Stumpf declares where it is that he stands.

H. W. B.

Received also:—

James Adam, *The Religious Teachers of Greece, being Gifford Lectures on Natural Religion delivered at Aberdeen*, Edited with a Memoir by his Wife, Adela Marion Adam, Edinburgh, T. & T. Clark, 1908, pp. lv, 467.

Josiah Royce, *The Philosophy of Loyalty*, New York, Macmillan, 1908, pp. xii, 409.

David Duncan, *The Life and Letters of Herbert Spencer*, with 17 Illustrations, London, Methuen, 1908, pp. xiii, 621.

Essays, Philosophical and Psychological, in Honour of William James, Professor in Harvard University, by his Colleagues at Columbia University, London, Longmans, 1908, pp. viii, 610.

Henry Maudsley, *Heredity, Variation and Genius, With Essay on Shakespeare, "testimonied in his own briningsforth," and Address on Medicine, Present and Prospective*, London, John Bale, Sons & Danielsson, 1908, pp. 224.

Gustav Spiller, *Faith in Man, The Religion of the Twentieth Century*, London, Sonnenschein, 1908, pp. vi, 190.

Marie V. Williams, *Six Essays on the Platonic Theory of Knowledge, as expounded in the later dialogues and reviewed by Aristotle*, Cambridge, University Press, 1908, pp. vii, 133.

Clifford Whittingham Beers, *A Mind that Found Itself, An Autobiography*, London, New York, etc., Longmans, 1908, pp. viii, 363.

Herbert Joseph Davenport, *Value and Distribution, A Critical and Constructive Study*, Chicago, University of Chicago Press, 1908, pp. ix, 582.

Annie Besant, *An Autobiography*, Illustrated, Third Impression, with a New Preface, London and Leipsic, T. Fisher Unwin, 1908, pp. 368.

Ettie Stettheimer, *The Will to Believe as a Basis for the Defence of Religious Faith, a Critical Study*, "Archives of Philosophy," No. 2, New York, The Science Press, 1907, pp. vi, 97.

Frederick J. E. Woodbridge, *Metaphysics, a Lecture delivered at Columbia University*, 18th March, 1908, pp. 26.

Hans Driesch, *The Science and Philosophy of the Organism, the Gifford Lectures delivered before the University of Aberdeen in the year* 1907, London, A. & C. Black, 1908, pp. xiii, 328.

The Works of Aristotle Translated into English (J. A. Smith, W. D. Ross, Editors), Part 2. *De Lineis Insecabilibus*, by Harold H. Joachim, Oxford, Clarendon Press, 1908.

F. M. Urban, *The Application of Statistical Methods to the Problems of Psychophysics*, Philadelphia, Pa., The Psychological Clinic Press, 1908, pp. vii, 221.

Paul Gaultier, *L'Idéal Moderne; La Question Morale, La Question Sociale, La Question Religieuse*, Paris, Hachette, 1908, pp. viii, 355.

Hermann Ebbinghaus, *Abriss der Psychologie*, Mit 17 Figuren, Leipzig, Veit & Co., 1908, pp. iv, 195.

Eugen Heinr. Schmitt, *Kritik der Philosophie vom Standpunkt der intuitiven Erkenntnis*, Leipzig, Fritz Eckhardt, 1908, pp. viii, 507.

Richard Wahle, *Über den Mechanismus des Geistigen Lebens*, Wien and Leipzig, Braumüller, 1906, pp. vi, 573.

Otto Gilbert, *Die Meteorologischen Theorien des Griechischen Altertums, von der kglch. Bayerisch. Akad. der Wissenschaften mit dem Zographospreise gekrönt*, Teubner, 1907, pp. iv, 746.

Alois Riehl, *Der Philosophische Kritizismus, Geschichte und System*, Erster Band, *Geschichte des Philosophischen Kritizismus*. Zweite, neu vervasste Auflage, Leipzig, Engelmann, 1908, pp. vii, 614.

Stephan Witasek, *Grundlinien der Psychologie*, Mit 15 Figuren im Text, Leipzig, Dürr'sche Bchdlg., 1908, pp. viii, 392.

Max Kauffman, *Beiträge zur Pathologie des Stoffwechsels bei Psychosen*, Erster Teil, *Die progressive Paralyse*, Mit 9 Kurventafeln im Text, Jena, Gustav Fischer, 1908, pp. 188.

Fr. Hermann, *Gehirn und Schädel, Eine topographisch-anatomische Studie in photographischer Darstellung*, Mit 69 zum Teil mehrfarbigen Lichtdrucktafeln, Jena, Gustav Fischer, 1908, pp. 12 + 69.

John M. O'Sullivan, *Vergleich der Methoden Kants und Hegels auf Grund ihrer Behandlung der Kategorie der Quantität*, ("Kantstudien": Ergänzungsheft), Berlin, Reuther & Reichard, 1908, pp. 129.

Giordano Bruno, Opere Italiane ii. *Dialoghi Morali con Note di Giovanni Gentile*, Bari, Laterza and Figli, 1908, pp. xix, 512.

Giovanni Cesca, *Religiosità e Pedagogia Moderna*, Messina, Vincenzo Muglia, 1907, pp. 185.

VIII.—PHILOSOPHICAL PERIODICALS.

PHILOSOPHICAL REVIEW. Vol. xvi., No. 6. **J. A. Leighton.** 'The Objects of Knowledge.' [The object of knowledge, as meaning any terminus of judgment, implies the distinction of idea of object and object that warrants idea. Since knowledge or truth is neither idea nor object, taken alone, it must be a consciousness of the relation between judging mind and terminus of judgment. Hence truth, while actual or real, does not exist as particular things exist. Reality has a dual character. We may classify cognitive objects as over-individual existents, individual existents, and over-individual principles of validity. The first two classes involve the third. "All types of cognition presuppose the absolute validity of an ideal systematic or self-coherent whole of experience conscious of itself."] **A. O. Lovejoy.** 'Kant's Classification of the Forms of Judgment.' [It has been supposed that Kant took his classification from the Wolffian logic. Hauck has disproved this view, but deference to Kant has blunted his criticism. (1) In dealing with quantity, Kant has slipped from logic into mathematics, has nevertheless arbitrarily adhered to a triple division, and has been led into this error by his preconception of a triad of mathematical categories. (2) Under quality, Kant has confused the basis of division to be used for distinguishing species with that by which genera are distinguished. (3) Under relation, Kant is not confused, but his classification is intrinsically poor. (4) By modality, Kant means three different and incompatible things.] **E. H. Hollands.** 'Possibility and Reality.' [Spinoza's doctrine, that the real includes the possible, is based not only upon his abstract conceptualism in epistemology and his substantialistic pantheism in metaphysics, but also upon the assumption that there is a principle of order in the universe. Leibniz' doctrine, that the possible includes the real, is both a postulate of his ethico-religious views, and also a result of logical theory. It is, however, full of logical difficulties, chief among which is that arising from the separation of essence from existence. These difficulties are not overcome by Moore and Russell in their recasting of the Leibnizian view.] Discussion. **G. W. Cunningham.** 'Dr. Ewer on the Freedom of the Will.' [Critique of Ewer's paper in xvi., 298 ff. The writer attempts to prove the inadequacy of the existential standpoint, and to state briefly the claims of the concrete teleological point of view.] Reviews of Books. Notices of New Books. Summaries of Articles. Notes. Vol. xvii., No. 1. **W. James.** 'The Pragmatic Account of Truth and its Misunderstanders.' [Seeks to clear up certain misapprehensions regarding pragmatism: that it is only a re-editing of positivism, that it is primarily an appeal to action, that it explains not what truth is but only how it is arrived at, that it ignores the theoretical interest, that it is shut up to solipsism, that pragmatists cut themselves off from the right to believe in ejective realities, that no pragmatist can be a realist in his epistemology, and that what pragmatists say is inconsistent with their saying so.] **H. A. Overstreet.** 'The Ground of the Time-

Illusion.' [The typical error of imperfect, human consciousness is the perspective quality, of which we have illustration in space, in time, in attention, and in the illusion of egoism. On the subjective side, this error lies in the fact that every perspective consciousness involves different degrees of interest. In the special case of time, its source is to be found in the durational character of our experience: for experience of duration necessarily implies experience of at least two durations of different rates, and difference of experienced rate depends upon difference in intensity of interest. Now varying intensity of interest means a divided self: hence if, in my attempt to judge values, I give always to my judgment the whole power of my person, I become perfect and my experience becomes timeless. Timelessness is thus the expression of perfection of spiritual nature, of interest in every respect entire; the time-illusion is to be escaped by inner growth into wholeness of life, by the inward path of a perfect love.] **C. F. Keary.** 'Matter in Ancient and Modern Philosophy.' [To understand Plato and Aristotle when they deal with 'matter' and 'form,' we must cast off the primal disability which springs from our confusion (due to 'cause and effect' and the idea of evolution) between the logical and the temporal 'first'. With the Greeks, physical science was in embryo, with us it is full-grown; while art, to us a sort of *hors d'œuvre* in life, with them was the essential of life. We must bring ourselves to realise that the substance of knowledge is the thing we know; that there is no substance so substantial as the thing itself, the gift of our senses joined to imagination or artistic faculty. Then we shall see that the statue is logically anterior to the bronze in the statue; that the tree as we know it is the 'substance' of the tree, and not the materials into which we may subsequently analyse it; that 'form' in general is being or substance.] **W. Urban.** 'What is the Function of a General Theory of Value?' [Practically, we are passing from accumulation of knowledge to its evaluation; theoretically, we are becoming aware of a new side of reality, a world of values. Since the most significant questions of philosophy appear first in the special sciences, it is in economics, ethics and æsthetics—especially in economics—that the theory of value is being developed. The problem is twofold, descriptive or psychological, and normative or axiological. Psychologically, the discovery of new facts has led to a reformation of our conception of the nature and conditions of the worth-judgment, and so of the laws of valuation; it has thus been possible to co-ordinate the different types of worth-attitude and of objects of value, as required by a general theory of value, and to explain by empirical laws spheres of valuation into which such explanation had not yet penetrated. Axiologically, the distinction between subjective and objective (normative) has been worked out; normative objectivity has been classified as instrumental and intrinsic; and the normative laws are being brought into harmony with the fundamental capacities of feeling and will.] Discussions. **B. C. Ewer.** 'Determinism and Indeterminism in Motives: a Reply.' **G. W. Cunningham.** 'Determinism and Indeterminism in Motives: a Rejoinder.' Reviews of Books. Notices of New Books. Summaries of Articles. Notes.

Psychological Review. Vol. xiv., No. 5. **W. M. Urban.** 'The Nature of Feeling and Will and Their Relations.' [Two views have been put forward with clear consciousness of the problem involved in the relation of the appreciative to the scientific description of the psychical, the one dualistic (Meinong) and the other monistic (Wundt). Critical consideration leads to the acceptance of the identity theory: the difference between feeling and will can be described only in conceptual, logical,

retrospective terms ; feeling and desire are differences of genetic mode, relative differences of functional meaning, not of content. This result justifies, as it also follows from, the writer's view that the worth of an object is its affective-volitional meaning, given in feeling-attitudes in which there is always reference to conation.] **R. W. Sellars.** 'A Fourth Progression in the Relation of Mind and Body.' [Beyond Baldwin's projective, subjective and ejective progressions is a progression of duplication, which takes us from the psychological to the psychic. Each individual now has a unique psychic life ; but the body, since the terms are on the same level, also becomes unique and passes out of experience. Reality is thus wider than experience ; but things-in-themselves are known in the sense that electricity is known—we can handle and manipulate them. The individual must be naturalistically conceived, with conscious experience as a functional part and expression of it in its relations to other individuals ; and the problem of two minds knowing the same thing must be attacked functionally : like organisations in like relations have like experiences, and gradually come to recognise this likeness.] **H. T. Woolley.** 'Sensory Affection and Emotion.' [The writer expounds and accepts Stumpf's view of the sense-character of the elementary affective processes, but extends this view, against Stumpf, to the emotions as well : there are all stages between an affectively-toned sensation and an emotion. She suggests further a distinction between affective and algedonic tone, the latter depending on the intensity of the algedonic sensations, the former upon the total organic reaction of organism to stimulus. She concludes with a restatement of this position in functional terms.] Discussion. **M. Meyer.** 'An Experimental Course in Æsthetics.' [Outline of a course in experimental æsthetics, largely based upon Hildebrand's *Problem der Form in der bildenden Kunst.*] Vol. xiv., No. 6. **H. Carr.** 'Apparent Control of the Position of the Visual Field.' [The writer reports a case of translocation of the visual field observed in a woman student of hysterical tendency. Translocation may be in any direction, and may be induced and sustained by movement of head, eyes or body ; new objects introduced into the field are not perceived, but may affect the brightness, colour and distance of the displaced images ; the functional condition of the eyes during translocation may be maintained, destroyed and reinstated at will ; the field may be moved at will in the direction of the third dimension, etc. The interpretation, roughly stated, is that during the time of displacement the retinas are insensitive to objective stimulation, and the subject sees an hallucinatory positive after-image of the objects primarily perceived. The writer seeks to work out this theory in neural terms.] **G. H. Mead.** 'Concerning Animal Perception.' [The author asks whether a line can be drawn between perception, not rational but intelligent, as displayed in the adaptations of crab or rat, and higher cognitive processes, or the consciousness of relation which makes human intelligence rational. Examining animal 'perception,' he finds that what appears in 'learning by experience' is a new stimulus for a preformed reaction, which up to the given and other like experiences had no determinate stimulus. He then turns to human perception, to find the core of thinghood to which varying sensory elements may be associated. This is discovered in contact sensations, Stout's 'manipulation'. The human hand thus plays a large part in perception ; it is very doubtful if chick, cat or dog, and doubtful if even the monkey has the isolated contact-material for building up perception. In conclusion, the author states that "any form that perceives is in so far carrying on a process of conscious mediation within its act ; and conscious mediation is ratiocination".] **E. H. Rowland.** 'A Study in Vertical Symmetry.' [A framed rectangle equally divided hori-

zontally tends to be seen as flat, and has very little 'picture' character; slightly unequal division lends itself to apperception of depth, and thus to associative interpretation as a picture.] **J. M. Baldwin**. 'Logical Community and the Difference of Discernibles.' [Any judgment, by reason of its community of intent, may be read as meaning more than one object, appearing to one person or many; one object only, appearing to one person or many; or one object only, appearing to one person only. The intent of community is the implication, in the rendering of an identical meaning by any one person, of other persons' judgment whoever they may be. The principle of identity of indiscernibles, psychologically interpreted, expresses the movement in community whereby like experiences of more than one object may yield an object identified as one. The correlative principle, of the difference of discernibles, expresses the movement in community whereby unlike experiences of one object may lead to its determination as more than one.—All this holds, primarily, of community-for-whom. If we add the mode of community-by-whom, we find that three modes of quantity may attach to judgments: quantity in extension, quantity in community-for-whom or community of appearance, and quantity in community-by-whom or in catholicity.]

The American Journal of Psychology. Vol. xviii., No. 4. **F. Kuhlmann**. 'On the Analysis of the Memory Consciousness for Pictures of Familiar Objects.' [Groups of simple pictures were laid before the observers for memorisation, and the power of recall was tested immediately, and at interval up to one month, the aim being to secure an introspective analysis of the memory consciousness. The results are treated under the headings: factors determining the order of recall; associations, their uses and changes; verbal imagery; visual antecedents. A special section is devoted to the function of visual imagery in the recall of the details of a picture (differences in first and last parts recalled; criteria of correctness; conscious changes of images; memory illusions). The writer emphasises the tendency of the imagery of the picture to change to the imagery of the object represented.] **L. W. Kline**. 'The Psychology of Humour.' [After a brief review of theories, and a classification of humorous stimuli, the author seeks to determine the nature and origin of humour as a mental process. Humour has two *differentiæ*; it is an end in itself, without practical interest in its object, and it implies a sense of freedom. It probably emerged as a distinctive process from states of inattentive freedom immediately following states of constrained attention. Its function is essentially social.] **A. F. Chamberlain**. 'Analogy in the Languages of Primitive Peoples.' [Shows, from the languages of the American Indians, how names are given to new and unfamiliar objects from analogy with the old and familiar.] **H. B. Davis**. 'The Raccoon: a Study in Animal Intelligence.' [Full report of observations and experiments. The animals are adroit, cunning, and gifted with high instinctive powers of attention and curiosity. The perfecting of the ability to undo fastenings is accomplished by a series of small changes, consisting chiefly in the omission of unnecessary movements and the combination of those required; experience with old fastenings holds over to trials with new (so Thorndike for rats; denied by Cole for raccoons); in course of time the animals reach a sort of generalised manner of procedure. Old animals learn more slowly than young, but profit more by their experience later. The learning-curves show, so far as comparison is possible, equal facility with monkeys (Kinnaman). Retention holds practically undiminished for more than a year. The raccoon, a nocturnal animal, is probably colour blind. No certain cases of imitation were

observed.] **E. C. Sanford**. 'Minor Studies from the Psychological Laboratory of Clark University.' **W. L. Gard**. 'XIX. A Preliminary Study of the Psychology of Reasoning.' [Report of the mode of solution of arithmetical puzzle problems. There is no evidence of the syllogistic form; the processes are associative and apperceptive, of the ordinary kind, working under the special conditions of attention. The almost successful solution of a problem induces a mental 'cramp'. Reasoning is often only obscure insight, or guesswork, with appeal to trial and error.] **M. K. Smith**. 'XX. On the Reading and Memorising of Meaningless Syllables Presented at Irregular Time Intervals.' [All observers tried to equalise unequal intervals, by premature enunciation, suspension of rhythm, mode of articulation, beating time, etc.] **A. E. Tanner**. 'Spinoza and Modern Psychology.' [In many respects (theory of will, doctrine that all consciousness is motor, etc.) Spinoza anticipates modern psychology.] **H. E. Houston** and **W. W. Washburn**. 'On the Naming of Colours.' [Report of tests with school children and college students. R, G, B have a broad range; G overlaps B, and B overlaps V.] Psychological Literature. Book Notes. Vol. xix., No. 1. **W. M. Wheeler**. 'Vestigial Instincts in Insects and Other Animals.' [The writer calls attention to such vestigial instincts as the honey-storing of the northern *Polistes*, and the sudden change in respiratory methods of the deep-water *Lymnæi* when transferred to shallow water. The vestigial instinct-action presents itself as an act of racial or phyletic memory, dependent on psychophysical dispositions abiding in latency; it shows that the capacities of even the lower organisms are greater than their ordinary routine behaviour might lead us to suppose. The subject is one for comparative, rather than for strictly experimental biological study.] **W. H. Burnham**. 'Attention and Interest.' [Interest is used to denote both a permanent habit of preperception and a temporary affective state of complex character. The relation of the latter to attention is in question. Attention is a reaction of the whole organism, comparable to the tropisms of plants and animals. An affective state is correlated with this reaction. It is more accurate to say that interest depends on attention than to make attention dependent upon interest.] **A. F. Chamberlain**. 'Notes on Some Aspects of the Folk-Psychology of Night.' [Notes on the ethnological and folk-lore material relating to night and the reactions to it on the part of civilised and uncivilised races; night and death, night as mother, as the time of evil, as the time for the consummation of marriage, as soother and counsellor, as bogey, etc.: night and meals, and hospitality, and work; nightmare, weatherlore of night, etc.] **F. B. Barnes**. 'Some Aspects of Memory in the Insane.' [Report of an experimental study. Increase in the number of nonsense-syllables in a series increases the number of repetitions required much faster in the case of the insane than in that of normal observers. Generative, effectual and retroactive inhibitions are more pronounced in their effect in the abnormal mind. There is much greater advantage in divided over massed repetitions for the insane. All sources of confusion and error work more markedly for the pathological mind.] **C. E. Ferree**. 'The Intermittence of Minimal Visual Sensations Studied from the Side of the Negative After-image.—I. The Fluctuation of the Negative After-image.' [In a previous paper the writer ascribed the fluctuation of minimal visual stimuli not to intermittence of attention, but to interruption of the process of adaptation by involuntary eye-movement. In the present study he attacks the problem from the reverse side. The theories of the intrinsically oscillatory character of the after-image process are considered, critically and experimentally, and found wanting. A long series of experiments is then adduced to

prove that the fluctuation depends on the causes previously alleged for peripheral sensation. Eye-movement acts, however, not directly, but indirectly, by way of visual 'streaming,' the movement of some viscous, visually active material over the retina. The streaming phenomenon is described in detail.] **E. C. Sanford.** 'Minor Studies from the Psychological Laboratory of Clark University.' **T. J. Stevenson** and **E. C. Sanford.** 'XXI. A Preliminary Report of Experiments on Time Relations in Binocular Vision.' [Practically no interval at all can be inserted between the periods of excitation of the two retinas without destruction of stereoscopic relief. If the interval is long enough to prevent fusion of the stereoscopic diagrams, their parts are apperceived as in motion. As it is shortened, the relief appears to come in, not suddenly and in full amount, but gradually.] Discussion. **E. B. Titchener.** 'The Method of Impression and Some Recent Criticism.' [Defence of the method against Alechsieff.] Psychological Literature. Book Notes.

JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS. iv., 23. **G. S. Fullerton.** 'The Doctrine of the Eject.—III.' [Argues that the analogical inferring of other minds is as "rational" as any inference can be, and not to be set down to 'instinct'.] **P. Hughes.** 'Concrete Conceptual Synthesis.' ["Whereas in the sciences of generalisation, the more highly organised the science, the poorer the concept of any *object*, to which the generalisations apply, in the sciences of concrete conceptual synthesis, the concept and definition of an object are the richer the more organised, historical and geographical science becomes."] **B. C. Ewer.** 'The Anti-realistic "How?"' [*Viz.*, as to how consciousness can transcend itself. "There is certainly no satisfactory answer," but the question should not be asked. Admits among the difficulties inherent in the conception "the fact that the transcendence of the true perception seems not to differ psychologically from the spurious transcendence of the false one".] iv., 24. **A. E. Davies.** 'Imagination and Thought in Human Knowledge.' [Desiderates a conception of the imagination "in such a way that it may serve as an instrument of truth".] **S. I. Franz.** 'Psychology at Two International Scientific Congresses.' [Heidelberg and Amsterdam.] **W. T. Bush.** 'Sub Specie Aeternitatis.' [A spirited and readable attack on the pedantic devotion to defunct problems which is traditional in philosophy.] iv., 25. **M. W. Calkins.** 'Psychology: What is It about?' ["In so far as it is the science of mental function, it is necessarily the science of the mental functioner."] **E. B. McGilvary.** 'Realism and the Physical World.' [States four criteria of the 'independent' realities which idealist and realist alike believe in and points out that they are all pragmatic. "Immediate experience furnishes the *qualia* from among which the pragmatic criteria help us to pick out some which can be consistently assumed to have independent reality."] iv., 26. **G. Vailati.** 'The Attack on Distinctions.' [Shows that "the various methods employed by philosophers for the criticism of distinctions . . . lead to a result diametrically opposite to the one at which it aimed, *i.e.*, lead to the increase rather than the decrease in the number and importance of the distinctions concerned".] **S. E. Lang.** 'Logic and Educational Theory.' [Criticises a review by J. G. Hibben.] v., 1. **A. E. Lovejoy.** 'The Thirteen Pragmatisms.—I.' [See below.] **M. W. Calkins.** 'Psychology as Science of Self.—I. Is the Self Body or Has it Body?' [It *has*.] v., 2. **A. E. Lovejoy.** 'The Thirteen Pragmatisms.—II.' [A tabulation of doctrines enunciated (or said to be so) by various pragmatists, followed by a demand that they be distinguished by different

names. The unlucky number is however arrived at by an enumeration which is not exhaustive—there is, for example, no reference to the pragmatic account of verification and error, nor to the fact that the pragmatic doctrine of truth is essentially a criticism of older notions on the subject—while the logical connexions between the doctrines enumerated are not brought out adequately. Nor does the writer propose any remedy for the defects in the nomenclature he has discovered, or himself make use of the existing distinction between 'pragmatism' and 'humanism'.] **G. P. Adams.** 'Sub specie Aeternitatis.' [*Cf.* iv., 24.] v., 3. **A. B. D. Alexander.** 'Kuno Fischer; an Estimate of His Life and Work.' **M. W. Calkins.** 'Psychology as Science of Self.—II. The Nature of the Self.' [It is persistent, inclusive, unique, related.] **M. Prince.** 'Prof. Pierce's Version of the late "Symposium on the Subconscious".' [Shows that he has misrepresented Janet, and relates some interesting experiments to prove the existence of a coactive consciousness.] v., 4. **J. Dewey.** 'What does Pragmatism mean by Practical?' [Taking Pragmatism as a method it will apply equally, but variously, to objects, ideas and truths, with corresponding shades of 'practical'. James asserts all three, but does not distinguish them enough, his chief aim being to deny that truths are *a priori* and eternal, and that their value is static and not dynamic. He tends however to make unpragmatic assertions when over-generously appreciating the working value of his opponent's views. But he is right in emphasising the personal factor found in truth-evaluations, the failure to recognise which has hitherto led to "that dishonesty, that insincerity characteristic of philosophic discussion". To admit this will involve much searching of hearts, but will some day "be accounted unto philosophy for righteousness' sake".] **A. R. Gifford.** 'The Pragmatic Ὑλη of Mr. Schiller.' [The doctrine that 'reality is experience' is inconsistent with that of an indeterminate ὕλη. The latter too is self-contradictory since "sheer potentiality possessed of no characteristics is essentially unreal". But there is no attempt to show that ὕλη has been asserted to be 'reality' in the sense required by the argument.] v., 5. **M. W. Calkins.** 'Psychology as Science of Self.—III. The Description of Consciousness.' [Argues that "the merely structural psychologist's treatment of emotion, thought, recognition, etc.," is inadequate.] **J. B. Pratt.** 'Truth and Ideas.' [Declares the ambiguities of 'truth' to be a disgrace to philosophy, rejects its identification with 'reality' and objects to its identification with 'known fact'. The real question is as to what makes a belief 'true' rather than 'false'. (1) The common answer is that your thought is true, if the object of your thought is as you think it. There is also (2) Radical Pragmatism, for which truth does not transcend the individual experience, and (3) a view cited from James which speaks of 'objects really there'. (3) Appears indistinguishable from (1), while 'true' and 'false' are not rightfully applicable to 'plans of actions' and inventions at all.] v., 6. **A. H. Lloyd.** 'The Meaning of $\sqrt{-1}$.' [It is 'only an application of the negative to the sphere of products or areas,' but with the 'qualification' that the notion is only relatively true.] **B. H. Bode.** 'The Problem of Objectivity.' [A destructive criticism of the 'new realism' as presented by W. P. Montague in iv., 4 and 14, both in its details and in principle. It is pointed out that in general it must assert (1) the possibility of emotions without awareness, and (2) the same validity for all our perceptions and thus destroy the possibility of error. The doctrine thus logically leads to Berkeleyanism rather than to 'panobjectivism'.] v., 7. **J. E. Boodin.** 'Consciousness and Reality.—I. Negative Definition of Consciousness.' [Consciousness is not an energy nor a relation nor a thing, but 'a

non-stuff dimension of reality'.] **W. James.** '"Truth" *versus* "Truthfulness".' [A proposal to reserve the term 'truth' for the abstract intellectualist use, and to denominate 'truthfulness' the concrete pragmatic sense of the term.] **W. T. Bush.** 'Provisional and Eternal Truth.' [A reply to Adams's criticism in v., 2 of article in iv., 24.]

INTERNATIONAL JOURNAL OF ETHICS. Vol. xviii., No. 2, January, 1908. **R. Balmforth.** 'The Moral Development of the Native Races in South Africa.' ["The State should impose a special educational tax on natives, the proceeds of which should be devoted exclusively to native elementary, industrial, and higher education, and particularly to the establishment of industrial institutes. The organisation and management of the schools and institutes should be placed in the hands of representative boards, to which the mission school and institutes might be transferred."] **J. A. Ryan.** 'Is Stock Watering Immoral?' ["Stock watering is typical of almost all the improper practices of corporations. It it typical because it is essentially an attempt to get excessive and unjust profits on capital."] **C. Holcombe.** 'Oriental Ethics Compared with Western Systems.' [An account of the Taoist and Confucian Ethics as formulating opposed yet complementary moral codes.] **E. Boutroux.** 'The Psychology of Mysticism.' [Regarding mysticism as "a life, a movement, a development with a definite character and direction," endeavours to mark the different stages of this development, and to determine the significance and value of mysticism as bearing on the life and destiny of individuals and of humanity.] **C. W. Super.** 'Motive in Conduct.' [Shows by a scientific examination of concrete cases the variety of dominant motive there is in the action of different individuals.] **I. W. Howerth.** 'The Social Ideal.' [The social ideal must be constructed on the basis of the actual state of society. Such an ideal consists of three mutually involved elements—social intelligence, social economy, and voluntary co-operation.] **C. T. Burnett.** 'A Fundamental Test for Determinism.' [Argues against necessarianism by propounding the question: "What is the effect upon the validity of the reasoning process by which determinism arrives at its conclusions, if we acknowledge that those conclusions are true?"] Book Reviews.

THE SOCIOLOGICAL REVIEW. Vol. i., No. 1, January, 1908. London: Sherratt & Hughes. This new Quarterly takes the place of the annual "Papers" of the Sociological Society. The intention of the change, as explained by the Editor in his very able editorial, is to secure greater continuity of treatment and more scientific scope, as well as to put the work of the Society on a permanent footing and render it more accessible. The price is to be 2s. 6d. net quarterly. Annual Subscription, post free, 11s. 6d. The contents are varied and interesting. The Editor, **Prof. L. T. Hobhouse,** states that the function of a sociological journal is to assist in the work which General Sociology has to do, in bringing the work of specialists together and in affording facilities for the discussion of the broad sociological bearing of each specialistic investigation. **Prof. E. Westermarck.** 'Suicide. A Chapter in Comparative Ethics.' [Gives an interesting survey of the facts regarding suicide and the extreme variation of moral judgment regarding the deed.] **Rev. W. D. Morrison, LL.D.** 'The Criminal Problem.' [Crime much more a social than a penal problem. Changes in the penal law will have comparatively little effect on the amount of crime.] **R. R. Marett.** 'A Sociological View of Comparative Religion.' [Comparative Religion a branch of empirical science; its method primarily that of Social Psychology, qualifying its attention to the Social Subject by a secondary attention to Individual

Psychology and Social Morphology.] **H. A. L. Fisher.** 'The Sociological View of History.' [Anthropology supplies hints of living and shaping influences, but no adequate account of their operation. Such an account can only be obtained by historical investigations.] Discussions: **Prof. P. Geddes.** 'The Survey of Cities.' **W. H. Beveridge.** 'The Unemployed Workmen Act in 1906-7.' Reviews of Books, Periodical Literature, Books Received, Notices.

REVUE DE MÉTAPHYSIQUE ET DE MORALE. 16e Année. No. 1. Janvier, 1908. **Émile Boutroux.** 'William James et l'expérience religieuse.' [Admirable analysis of Prof. James's *Varieties of Religious Experience*, with critical comments. Difficulty of treating mysticism as "experience": it lacks the necessary duplication of the subject. Besides how effect the transition from subjective to objective? Questionable to make personal religion its only living and efficacious form. If feeling is the soul of religion, institutions are its body, and it is doubtful if it could survive their disappearance.] **H. Bergson.** 'À propos de "l'Évolution de l'intelligence géométrique".' [Reply to M. Borel.] **E. Bouasse.** 'Évolution de la matière et physique des corps solides.' [No satisfactory theory of solids as yet exists.] **G. Dwelshauvers.** 'De l'intuition dans l'acte de l'esprit.' [All thought is the analysis of an intuition. The unity in an act of the spirit is not logical but prelogical. Genius depends on intuition. The belief in an external world is based upon the act which affirms the existence of subjects, and it is only in the development of this act that logical reasons appear.] Études Critiques: **G. Cantecor.** 'Étude de morale positive par M. Belot.' **D. Parodi.** 'Le pragmatisme d'après MM. W. James et Schiller.' Discussions: **M. Winter.** 'Sur la logique du Droit.' [Réponse a M. Mallieux.] Questions Pratiques: **P. Bureau.** 'Le droit de grève et la liberté du travail.' Supplement: Troisième Congrès international de philosophie. Nécrologies, Livres, etc.

REVUE DE PHILOSOPHIE. 1er Janvier, 1908. **G. Dromard.** 'Motor Elements of Æsthetic Emotion.' [A work of art moves us mentally to complete it; this is the suggestiveness of art; its limits.] **E. Peillaube.** 'The Organisation of Memory.' [The action of time on memories.] **J. Martin.** 'A History of Æsthetic Ideas.' [On a Spanish work by Dr. Menendez, dealing with the æstheticism of Schiller, Goethe, Richter, the two Schlegels, Schelling, Hegel, Hartmann, and others.] **O. Hamelin.** 'Aristotle; Physics II., Translation and Commentary: Essay on the Principal Elements of Representation.' [Sorbonne thesis for the Doctorate of Letters, pronounced by the judges to mark an epoch in Philosophy.] **E. Baron.** 'Dr. Rashdall on the Theory of Good and Evil.' [An intelligent and kindly review.] 1er Fevrier, 1908. **P. Borrell.** 'The Idea of Democracy.' [Democracy is "that social organisation which tends to heighten to the uttermost the civil conscience and responsibility of each individual". It is "the access of all citizens to the trade of a king". When a people recognises its incapacity of governing itself, the most democratic thing it can do is to set up a monarch.] **C. de Beaupuy.** 'St. Anselm's Argument is *a posteriori*.' [The celebrated proof of the existence of God from our conception of a Being than which nothing greater can be thought, is said to rest on what is called the argument from degrees of perfection, which is that finite perfections imply infinite perfection somewhere, which argument is said to be *a posteriori*. Not clear.] **P. Duhem.** 'Absolute and Relative Movement.' [The mediæval opinion that there can be no local movement except in reference to some fixed body; also the question as to the place of the outer surface of the universe.] **S. Rome.** 'The Dualism of Pascal.' [Dualism here means

the synthesis of two opposite positions. Throws great light on Pascal.] **P. J. Cuche.** 'The Value of Experiment in Psychology.' [A review of an Italian work by Dr. Gemelli. Judicious.] 1er Mars, 1908. **A. Sertillanges.** 'The Soul and Life According to St. Thomas Aquinas.' [There is a natural unity of soul and body as of form and matter. "The idea of the soul raising the arm and swinging the legs by an action of its own is the idea of a savage."] **T. Richard.** 'School Teaching and the Progress of Science.' [The good and evil of the Manual or Text-book. It is a necessity of teaching, it registers discoveries, but makes none. A teacher should write Articles away from his Manual.] **P. Duhem.** 'Absolute and Relative Motion.—v.' [The fourteenth century Schoolmen on Place. "Ockham taught that there is nothing real or positive in the notions of Point, Line, Surface. The only Reality is Volume of three dimensions. Surface is a pure negation, the negation of the volume of a body extending beyond a certain term; the line is the negation of the extent of a surface passing a certain frontier; the point is the negation of a line being prolonged beyond a certain limit."] **F. Warrain.** 'Pure Reason and Antinomies.' [Review of a book so entitled by F. Evellin, Paris, Alcan. The author resolves the four Kantian antinomies into theses and antitheses, the theses the work of reason, the antitheses, that of imagination; the theses having for their object the real, the antitheses the sensible.]

Revue de Philosophie. 1er Avril, 1908. **J. Gardair.** 'Fogazzoro and Rosmini.' [Fogazzoro, author of *Il Santo*, and of *Human Ascents, Evolutionism and Catholicism*, wrote also *The Figure of Antonio Rosmini*, who, he says, considered "that all nature is animated, that there is in it a perfect continuity, that elementary life rises to organic life, and organic life, step by step, to species higher and higher; that, when the organism predisposed to humanity reaches its highest perfection, a divine ray of truth presents itself to it and gives it intelligence". On this the reviewer remarks: "the end of this essay is to show at once the beauty and the insufficiency of this system".] **L. Billia.** 'The Object of Psychology.' ["The true, sole object of Psychology is the Ego. No internal fact is observable or conceivable except on condition of being a fact of the Ego. Further, since of sensible things, or what are called external facts, nothing is apprehended except on the title of perception, the other series of facts, movements, the external world, so far as we seize them, are also reducible to states and modes of the Ego. All descriptive sciences meet in psychology."] **E. Peillaube.** 'The Organisation of Memory: the calling up of Recollections.' **P. Duhem.** 'Absolute and Relative Movement.' [How a Paris doctor of the fourteenth century, Jean de Jandun, argues from the essential notion of Place that it is beyond the power even of Omnipotence to move the Earth.] 1er Mai, 1908. **Editorial.** 'Programme of Studies on the Problem of Knowledge.' [Promises a series of Articles on Epistemology, intellectualist and objectivist, on the basis of Aristotle and St. Thomas. "Pragmatism, which is essentially anti-rational, dissolves the notion of truth, confounding it with its practical consequences, that is to say, with utility, and, in spite of the noblest efforts, replunges us into scepticism. It is irreconcilable with the Catholic religion, and also, as M. Poincaré says, with Science."] **J. Martin.** 'A Poet Philosopher.' [M. Sully-Prudhomme. "This Essay was shown to Sully-Prudhomme about two months before his death; he recognised in it a faithful exposition of his thought."] **P. Duhem.** 'Absolute and Relative Motion.—vii.' [Opinions of Albert of Saxony, a Parisian doctor of the fourteenth century, a follower of Ockham: that the place of a thing is the body that

bounds it; that a thing may have any number of places, as many as it has containing bodies, one outside the other; that the place of a thing may change without the thing itself moving, *e.g.*, the towers of Notre Dame swept by the wind; that the universe, having no containing body, has no place; that therefore it cannot move locally; that no fixed origin of co-ordinates can be found, to which to refer the motion of the universe; that, nevertheless, God can transfer the universe, which translation will not involve any change of extrinsic relation to a given point, but will be a change wholly intrinsic. At the back of this and similar mediæval discussions is the Aristotelian question, Must the earth be fixed for the heavens to move?]

ARCHIVES DE PSYCHOLOGIE. Tome vii., No. 2. **T. Flournoy.** 'Automatisme téléologique antisuicide: un cas de suicide empêché par une hallucination.' [After recalling the well-known case of Benvenuto Cellini, the writer reports a similar case, in which the intention of suicide by drowning was frustrated by the apparition of a friend. Analysis brings out four necessary conditions: an imaginative, somewhat neuropathic temperament, subject to temporary dissociations; a tendency to optimism; a collocation of depressing circumstances; and moral isolation, the absence of any intimate friend.] **E. B. Leroy.** 'Escroquerie et hypnose; escroqueries prolongées pendant plusieurs mois à l'aide de manoeuvres hypnotiques pratiquées sur une des victimes.' [The case has three stages: a period of resistance on the part of the victim; a period in which domination is attempted by way of rappings, movements of furniture, etc.; and a period in which recourse is had to mysterious voices and the induction of hypnosis. The author rightly remarks that such cases of swindling by hypnotic influence are rare.] **M. Métral.** 'Expériences scolaires sur la mémoire de l'orthographe.' [Experiments show that it matters little for memorisation of the spelling of a word whether it is enunciated to the pupils letter by letter or syllable by syllable. The important thing is to bring into play all the verbal memories, and especially the visual; the sound and sense of the word must be associated to its visual physiognomy.] **C. G. Jung.** 'Association d'idées familiales.' [Members of the same family tend towards the same type of ideational association. Thus, with a possible maximal difference of 13·3 per cent., the average difference for non-related males is 5·9, for related only 4·1 per cent.; for non-related females, 6, and for related only 3·8 per cent. The difference between husband and wife is 4·7 per cent.] **E. Claparède.** 'Quelques mots sur la définition de l'hystérie.' [Discusses previous views, with special reference to Babinski. Defends the thesis that hysteria is "un édifice à plusieurs étages," and offers a typical schema. The primary neurosis of infantile mentality and disposition to play a part leads to secondary symptoms, inhibitory (amnesia, etc.), and positive (vomiting, vasomotor disturbances; simulation, lying). The inhibitions lead on to tertiary disorders: double personality, derangements of association. The 'secondary states' again lead on to increased suggestibility and disorders due to suggestion, fourth and fifth stages respectively.] Recueil de faits: documents et discussions. **P. Bovet.** 'Note sur un rêve.' **E. Claparède.** 'Exemple de perception syncrétique chez un enfant.' [A child of four is able to find the song he desires in his music-book by the general appearance of the score: memory is perfect after six months.] **R. Penel.** 'Science et athéisme.' [Critique of Le Dantec.] **A. Lemaître** and **A. Fleury.** 'Une opinion sur les peintures de H. Smith.' [Only the chalk head of Christ has artistic value.] **A. Elmer.** 'VIe Conférence suisse pour l'éducation des anormaux, Soleure, 1907.' Bibliographie. Notes diverses. Tome vii., No. 3.

D. Katzaroff. 'Expériences sur le rôle de la récitation comme facteur de la mémorisation.' [When we are learning anything by heart, we instinctively pause to say it over to ourselves from time to time. Experimental results prove that we are well advised. The saying over has a fixative effect distinctly superior to that of ordinary reading: although all that can be said, quantitatively, is that this superiority varies with the number and distribution of the repetitions as compared with the readings. Psychologically, the repetition furnishes a control of memorisation; it puts the observer in a state of active attention, and arouses the implied affective processes; and it familiarises him with the aspect of the detached inducing word or syllable. Physiologically, repetition involves cortical paths and centres distinct from those of reading.] **G. Rouma.** 'Un cas de mythomanie: contribution à l'étude du mensonge et de la fabulation chez l'enfant.' [Full report of the case of a five-year-old boy, with tales, drawings, account of heredity and environment, and suggestions for special education.] **A. Maeder.** 'Nouvelles contributions à la psychopathologie de la vie quotidienne.' [Notes on a number of incidents treated by Freud's method of psychoanalysis, and arranged under the headings of forgetfulness and confusion, lapsus calami and linguae, unconscious affective reaction, sexual fetichism and symptomatic actions.] Recueil de faits: documents et discussions. **E. Lombard.** 'Faits récents de glossolalie.' [Critique of the experiences and reports of Büsching and Paul.] Bibliographie. Notes Diverses.

Revue Néo-Scolastique. Février, 1908. **Cardinal Mercier.** 'Address to the University of Louvain.' [Modernism an outcome of Kantism.] **C. Sentroul.** 'Truth in Art.' ["Art always idealises, but sometimes, owing to the beauty ready-made of the model and the quasi-exactitude of the data, art neither exacts nor manifests the labour of idealisation which characterises it."] **J. Lottin.** 'Moral Statistics and Determinism.' [Antideterminist.] **N. Balthasar.** 'The Problem of God according to the New Philosophy.' [Sets aside M. Le Roy's proofs of the Divine Existence drawn from the System of Immanence.]

Zeitschrift für Philosophie und Philosophische Kritik. Bd. cxxxi., Heft 2, 1908. This is a Schelling number of the *Zeitschrift*, being ornamented with a portrait of the philosopher and containing three articles devoted to his teaching; the first is by **O. Braun.** 'Die Entwickelung des Gottesbegriffes bei Schelling.' [The Absolute or God is the central concept of Schelling's philosophy and determines all its modifications. In his first or Fichtean period it is practically identified with the unconscious creative ego. Under the impulse of physical studies nature next comes to be conceived as an effort towards self-consciousness. The problem is to think of representations as adjusting themselves to objects, and of objects as simultaneously adjusting themselves to representations. It is solved by making the two processes manifestations of a single unconscious energy, partially revealed in history, perfectly revealed in the creative activity of art. From this to neo-Spinozism is an easy transition. At this stage God is the All-One, the universe viewed as a totality. Then under the lead of the mystic Franz Baader a new direction is given to his thoughts, resulting in a confused theosophy of which Braun seems not prepared to decide whether it involves a personal God in the ordinary sense, but which, according to him, includes a large element of pessimism.] **W. Kinkel.** 'Schelling's Rede: über das Verhältniss der

bildenden Künste zur Natur.' [Schelling treated nature as an unconscious work of art, and he did a real service to artists by referring them to nature instead of to the antique, besides writing very beautifully on the subject of æsthetics; but he failed to construct an æsthetic theory, and his particular judgments are open to serious question.] **Anton Korwan.** 'Schelling und die Philosophie der Gegenwart.' [Schelling totally failed to explain the world by metaphysical methods. But his works are well worthy of being studied by contemporary metaphysicians—especially now that a convenient selection from them has been brought out by the publisher of the *Zeitschrift*.] **H. Schwarz.** 'Ein markantes Buch in der neu-idealistischen Bewegung.' [A highly laudatory review of a volume of essays by F. J. Schmidt advocating the abandonment of modern scientific methods in favour of speculative idealism.] **R. Falckenberg** and **J. Walter.** 'Nachtrag zu dem Necrolog auf L. Busse.' Rezensionen, etc.

ZEITSCHRIFT F. PSYCHOLOGIE. Bd. xlvi., Heft 1. **R. von Sterneck.** 'Die Referenzflächentheorie der scheinbaren Grösse der Gestirne.' [Outline of the author's theory, as given in his work *Der Schraum auf Grund der Erfahrung;* reply to Müller's criticism in vol. xliv.; critique of Deichmüller's experiments.] **L. Török.** 'Über das Wesen der Juckempfindung.' [Report of experiments which show that the sensation of itch derives from a weak stimulation of those cutaneous nerve-endings whose stronger stimulation produces the sensation of pain; that these nerve-endings are not identical with the organs of touch or temperature; and that the sensation of itch involves the stimulation of the free inter-epithelial nerve-terminations.] Besprechungen. [Offner on Stumpf's *Erscheinungen u. psychische Funktionen* and *Zur Einteilung d. Wissenschaften;* Cohn on Lipps' *Aesthetik*, ii.] Literaturbericht. **G. E. Mueller.** 'Gesellschaft für expermentelle Psychologie.' Bd. xlvi., Heft 2. **E. Becher.** 'Das Gesetz von der Erhältung der Energie und die Annahme einer Wechselwirkung zwischen Leib und Seele.' [There can be no doubt, after the experiments of Rubner and Atwater, that the law of the conservation of energy holds for psychophysical organisms, man included. The interactionist, who is bound to accept this fact, then has two principal paths open to him. He may postulate a psychical energy (or energies). But this assumption simply saves the constancy of the sum of physical and psychical energies, whereas experience shows an equality of intake and outgo of physical energy: it is only by forced hypotheses that the two points of view can be brought into accord. Or he may postulate an interaction which does not involve change in the amount of physical energy. This, the double-cause and double-effect theory, is the most attractive form of the interaction theory, and the form in which it stands nearest to parallelism. It is, however, open to objection, since it makes the psyche choose those relatively infinitely rare modes of operation which leave the law of conservation unaffected. On the whole, then, the law of conservation tells for parallelism.] **R. Herbertz.** 'Überblick über die Geschichte und den gegenwärtigen Stand des psychophysiologischen Problems der Augenbewegung.' [The earlier investigators were in search of a principle of eye-movement: a physiological, as expressed in the Donders-Listing law; a mechanical, as expressed in Wundt's law of least muscular exertion; or a psychological-epistemological, as expressed in the Meissner-Helmholtz law of easiest orientation. Recent work has raised the question, more generally, of the function of eye-movements in visual perception at large, with the result (in studies of reading) that the movements are not continuous but jerky, and that we see only in the pauses. Hence we may reverse Hering's

dictum, and say that vision with the moved eye hardly comes into consideration for perception; true visual cognition means an eye at rest.] Literaturbericht. Bd. xlvi., Heft 3. **M. Pappenheim**. 'Merkfähigkeit und Assoziationsversuch.' [The writer describes his method of direct repetition, in which a word is called to the observer, and the association-time measured; then the same word is called a second time, and the association experiment repeated; and finally (in the event of different associations) the observer is asked to reproduce his first association. Instances are given of the application of the method to normal persons, to hystericals, and to the mentally deranged. The normal results show that different associations occur most frequently with the slower reactions, and that they are more easily forgotten than the identical associations: this agrees with Jung's statement that delayed associations are more readily forgotten than those of normal duration.] **R. Baerwald**. 'Die Methode der vereinigten Selbstwahrnehmung.' [A defence of the questionary method. On the formal side, the gift of observation (sustained attention and reserve in judgment) is not the peculiar property of the trained psychologist, while its material requirement (familiarity with the subject-matter) may be fulfilled at the time that the method is employed. Elementary psychology relies upon experiment; the psychology of the higher processes may turn to the questionary. Care must be exercised in the choice of persons tested; technical questions should be introduced by an explanatory essay; if the question is vague and its precise formulation involves suggestion, alternative theories should be given side by side; conclusions may be drawn only where there is independent evidence from numerous sources; anything that smacks of emotion is to be ruled out; only concrete answers are to be accepted; and the questionary-sheet is to be supplemented by private interview or personal correspondence.] Literaturbericht. Bd. xlvi., Heft 4. **R. Müller-Freienfels**. 'Zur Theorie der Gefühlstöne der Farbenempfindungen.' [Simple colour-feelings are difficult to investigate, partly on account of complication by feelings of a higher order, partly because there is no simply based colour harmony. The writer gives a brief (and incomplete) review of the observations so far made, and then offers a dynamic theory in terms of the metabolic (assimilative and dissimilative) processes in the retina and its adnexa. The organ needs stimulation: hence our pleasure in bright light and glitter. Preference for single colours seems to depend upon structural differences in the receptive apparatus; in general, however, the brighter colours are the more pleasing. The pleasingness of the combination of neighbouring colours (law of small intervals) depends on the unity of the effect produced; it is in part due to spatial factors (relief). Combinations of more widely separated colours are pleasing when the various retinal processes are thrown into equal or balanced activity. Our pleasure in high degrees of saturation is largely an intellectual matter; they are striking, decided, while the unsaturated tones are obscure, dirty.] **R. Herbertz**. 'Die angeblich falsche Wissenstheorie der Psychologie: ein Protest.' [Detailed critique of Prichard's *A Criticism of the Psychologist's Treatment of Knowledge*, MIND, xvi., 27 ff.] Literaturbericht. Bd. xlvi., Heft 5. **G. Heymans** und **E. Wiersma**. 'Beiträge zur speziellen Psychologie auf Grund einer Massenuntersuchung.—IV.' [In order to meet the objection that their questionary returns had been furnished almost entirely by men, the authors gathered new material from women reporters, and here give such of their results as bear upon the characteristics of the sexes. They find precisely what they found before: that women are on the average more active, more emotional and less egotistic than men. Their previous conjecture, that the intellectual insufficiency of women depends on emotivity and ten-

dency to the concrete, is also confirmed.] **M. Frischeisen-Köhler.** 'Über die psychologischen und die logischen Grundlagen des Bewegungsbegriffes.' [Hamann's conclusions in vol. xlv. are due to his exclusive operation with the psychological bases of the concept of motion and his neglect of its logical motives. Mechanics, *e.g.*, treats of motion under two headings, kinematics and dynamics: for the former the relativity of motion is axiomatic, while in the latter the principle is still in dispute. Psychology is here in place only as the individual psychology of the great physicists themselves. Again, an 'isolated body' is for psychology an easily realisable fact; for physics it is always a theoretical fiction. Yet again, a motion may be present physically where the visual perception of movement is absent (rotating wheel); and the physical conception of 'energy' of motion has nothing to do with organic sensations and the 'feeling of resistance'. Finally, physical concepts have objective existence; they refer to facts (*Sachverhalt*) which can be apprehended and measured independently of any sensory experience.] **K. Marbe.** 'W. Wundts Stellung zu meiner Theorie der stroboskopischen Erscheinungen und zur systematischen Selbstwahrnehmung.' [The writer explains stroboscopic phenomena from Talbot's law and from the observation that phases of a movement may be omitted without our noticing their loss. Wundt has recourse to positive after-images and to the mental process of assimilation. Yet Wundt, so to say, forbids the testing of his own theory by declaring that systematic introspection, the result of what he terms the *Ausfragemethode*, is inadmissible. Linke, the latest writer from the Leipzig laboratory, is guilty both of misunderstanding and of error in fact.] Literaturbericht. Bd. xlvi., Heft 6. **R. Saxinger.** 'Gefühlssuggestion und Phantasiegefühl.' [In suggestion "wird ein Dasein oder ein Sosein durch Annahme oder Urteil erfasst"; suggestibility is, however, in part a matter of image-endowment. In accordance with this definition, affective suggestion can appear only in two cases: when an intellectual phenomenon is unaccompanied by feeling, and the feeling is brought in by suggestion (or contrariwise), and when the feeling which ordinarily accompanies such an intellectual phenomenon is modified by suggestion. Practically, the range of this mode of suggestion is somewhat limited. It operates by way of the phantasy feelings (Meinong), which stand to feelings proper as assumption stands to judgment. Mere desire for a certain kind of feeling, without the intervention of the phantasy feeling and the suggestive process (Ehrenfels), is inadequate. The phantasy feelings themselves cannot be produced, but may be abolished, by suggestion.—The paper ends with a reply to Dürr's critique of the doctrine of phantasy feelings.] **W. Wirth.** 'Erwiderung gegen K. Marbe.' [The part played by assimilative processes in stroboscopic observations is attested by tachistoscopic experiments with defectively printed words.] Literaturbericht.

Archiv f. d. gesamte Psychologie. Bd. ix. Heft 2 und 3. **T. Lipps.** 'Psychologie und Aesthetik.' [Defence of the author's definition of æsthetics as the "psychology of the beautiful and of art". Beauty is that character in virtue of which an object lays claim to a certain sort of valuation from the observer. Since æsthetic valuation always and only occurs in consciousness, every æsthetic problem is at the same time psychological. But more: psychology includes æsthetics. For that which makes the object beautiful (the subject-matter of æsthetics) is also that or a factor in that which determines æsthetic valuation in individuals; psychology therefore considers objects in so far as they lay claim to valuation. Further, when we speak of a 'beautiful object' or of a 'work of art,' we imply that something

is given which demands æsthetic valuation, and that the human mind is also present with the demand that from this something given the work of art shall be created; thing and mind are alike essential. We may look at the body of the work of art, so to say, and we have a sense-perception; we may look at its soul, and we have æsthetics; we may treat of body and soul together, and we have the history of art. What holds here of æsthetics holds also of logic and ethics. All three are normative sciences; the norm is the law of the creative or constructive mind; and individual judgments, volitions, valuations are the resultant of this norm and of subjective or individual factors. Psychology, treating the norms as facts, becomes in that sense a normative science, and also enters on the path which leads to natural laws of mind, of the same order with the laws of the physical universe.] **E. Meumann.** 'Über Assoziationsexperimente mit Beeinflussung der Reproduktionszeit: eine Mitteilung.' [Observers are of two main types: those who react quickly, with the first word that occurs to them, and those who react slowly, after accurate appreciation of the stimulus and of the relation to it of their response. If told to react as quickly as possible, the former obey readily, while the latter require practice and repeated suggestion; if told to follow instructions exactly, the latter obey readily, while the former lengthen their times but do not improve the quality of their answers. Hence an instruction which refers both to time and to quality is to be avoided; the results will betray a confusion of the two typical attitudes.] **H. J. Watt.** 'Über den Einfluss der Geschwindigkeit der Aufeinanderfolge von Reizen auf Wortreaktionen.' [The number of completed reactions decreases proportionally to the logarithmic increase of the rapidity of succession of the stimulus words; complete series were obtained, from various observers, between the limits 1,160 and 6,770 σ; the intervals described as pleasant varied from 800 to 2,140 σ. Where reaction words are often repeated, the distance most frequently separating them is one series; this frequency decreases, at first very quickly and then slowly, with increase of distance. Or, in terms of time, repetition occurs most frequently within 6 min., and (without special reason) rarely after 30 min. The repeated words indicate the sense-preferences of the reactors. The experiments show that increase of rate of presentation does not bring into play the stronger tendencies to reproduction; on the other hand, they throw no clear light upon the tendency to persistence, which must therefore be studied as heretofore in memory-work with nonsense syllables and in psychiatry.] **W. Specht.** 'Die Beeinflussung der Sinnesfunktionen durch geringe Alkoholmengen. 1 Theil: Das Verhalten von Unterschiedsschwelle und Reizschwelle im Gebiet des Gehörssinnes. Preisgekrönte Arbeit.' [Alcohol raises the difference limen, and lowers the stimulus limen; these effects are parallel both in degree and in temporal course. Amount of alcohol conditions only degree of change: this depends also on individual sensitivity. Finally, there is complete accord between the objective record of the alcoholic effect and the introspection of the observers. In work on the difference limen with small amounts of alcohol, there is a tendency to give judgments of equality; with larger amounts, the second sound is always judged to be the louder. This result points to a twofold narrowing of consciousness: first, it is completely taken up with current sense-impressions, so that the function of comparison is inhibited; secondly and rather paradoxically, it is concentrated upon the single impression, to the exclusion of concomitant disturbances. The lowering of the stimulus limen depends partly on increased excitability, partly on this narrowing of consciousness.] Literaturbericht. [Klemm on Lipps'

Leitfaden.] Referate. Bd. ix., Heft 4. **K. Buehler.** 'Tatsachen und Probleme zu einer Psychologie der Denkvorgänge.—I. Über Gedanken.' [An attempt, in continuation of the work from Marbe to Messer and on the basis of experiments in the form of question and answer, to define and classify 'thoughts,' regarded as mental elements, ultimate units of our thinking experiences, on a par with but altogether different from 'sensations'. Three main types of thoughts are distinguished: the consciousness of rule, the consciousness of relation, and the comprehensive but apparently objectless meaning or 'intention'. Further analysed, every thought proves to have two aspects: the 'what-determination' of the thought content and the reference to the object. The latter may be termed intention in the narrower sense; the former may be a group of ideas, consciousness of rule, of relation, etc., or (in the case of intentions in the wider sense) place-determination within a conscious arrangement. As an inclusive term for this manifold of modifications of consciousness, over against sensation (*Empfinden*), we may use knowledge (*Wissen*).] **V. Benussi.** 'Zur experimentellen Analyse des Zeitvergleichs.—I. Zeitgrösse und Betonungsgestalt.' ['Empty' times may present three different objects to consciousness: the complex of limiting noises, the length of time included between these, and a subjective form of accentuation. Introspection shows that the first object is prominent in the case of short times (say, 360 σ) and the second in the case of long times (1,440 σ). Hence the validity of comparison and the direction of errors must be essentially determined, for short times, by the quality of the limiting sounds, whereas the estimation of length of time as such appears only with long times. Since an object is most adequately apprehended in the state of attention, we come nearest to an accurate appreciation of time when we attend to it: attention does not lengthen time, but inattention shortens it. This accounts for the error of time-sequence: the second time is apprehended more attentively and adequately than the first, and the first therefore seems shorter. In the case of short times we have further to take account of the time of persistence (*Gegenwartszeit*) of the signal. If the more persistent sound is initial, the time is shortened; if it is final, the time is lengthened. These effects are not equal, since the former is partly compensated by increased attention to the interval.] **R. Lagerborg.** 'Zur Abgrenzung des Gefuhlsbegriffs.' [Feeling should be reserved for the unlocalised contents of undifferentiated consciousness, so that we may speak of algedonic feelings or of algedonic sensations according to circumstances. Stumpf's sharp distinction between the sense-feelings and the feeling-character of emotions cannot be maintained.] **O. Weiss.** 'Die Registrierung der menschlichen Herztöne durch Seifenhäutchen.' [Description of method and illustration of results.] **P. Linke.** 'Bemerkungen zur Dürrschen Kritik meines Würzburger Vortrags ("Neue stroboskopische Versuche").' **G. E. Mueller.** 'Gesellschaft für experimentelle Psychologie.' Literaturbericht. [Segal on Schmarsow's *Grundbegriffe d. Kunstwissenschaft.*] Referate. Bd. x., Heft 1 und 2. **A. Lehmann** und **R. H. Pedersen.** 'Das Wetter und unsere Arbeit. Experimentelle Untersuchungen über den Einfluss der meteorologischen Faktoren auf die körperliche und seelische Arbeitsfähigkeit.' [A study of the influence of weather on mental and bodily work. The paper opens with a description of the method of recording the meteorological observations and of determining the coefficients of correlation. Bodily work was tested by means of the Lehmann ergograph (school children) and the Regnier dynamometer (three adults). It proved to be dependent, in various ways, upon illumination, temperature and atmospheric pressure; the dependence is

explained by reference to the temperature requirements of the organism and the amount of hæmoglobin in the blood. On the mental side, the writers show first that 'disposition,' inclination for work, varies with the height of the barometer. They then distinguish two types of mental work: that which demands energy of attention (*e.g.*, retention) and that which appeals to acquired delicacy of psychophysical organisation (*e.g.*, discrimination). The former, represented by memory experiments, is subject to the same meteorological influences as bodily work; the latter, measured as the rapidity of addition, is wholly independent of illumination and atmospheric pressure, while its relation to temperature is markedly different from that of memory. The results have theoretical importance, as explaining certain fluctuations in mental measurements, and are also of practical educational interest.] **E. Tassy.** 'Ideativer Erethismus.' [The basal law of the intellect is the law of analogy, which finds its explanation in the principle of specific connexion (*Verkettung*) along the line of least resistance. The three theoretically distinguishable modes of erethism of the neurones which mediate ideas—coincidence, reformation and exaltation—all conform to this law of analogy, and to the implied law of contrast. The æsthetic effect of beauty, which is conditioned upon an indeterminate extension of impersonal knowledge, may be explained in terms of the three erethisms, and indeed bears direct testimony to their existence.] **Emil Freiherr von Gebsattel.** 'Bemerkungen zur Psychologie der Gefühlsirradiation.' [The author defines feelings as 'Erlebnisse der Stellungnahme und des inneren sich Befindens in Angesicht irgendwelcher Gegenstände,' and thus rules out the class of logical feelings. He finds that feelings are connected only with the object of attention, so that they share in the *Richtungsbestimmtheit* of the self; objects thus possess an 'affective tone'. This, which is fluctuating, must be distinguished from 'affective significance,' which is an objective determination of the objects themselves. While, now, feeling is referred to the apperceived contents, it need not have its ground in them. Feeling irradiates; the affective tone may expand, to cover the whole either of a uniformly apperceived or of an apperceptively articulated manifold. There may even be an apparent shift or transference of affective tone: this is in reality due to the fact of co-apperception, to the presence of 'nicht eigentlich intendierte gedankliche Elemente' along with the elements 'auf die ich innerlich abziele'. The various forms of co-apperception are outlined, and the shift of feeling illustrated and discussed under the different headings. Methods of analysis are suggested, by means of which affective illusions of the irradiatory type may be discovered.] **F. Biske.** 'Zum Verständnis des psychophysischen Gesetzes.' [On the analogy of the physical law of the diffusion of energy in a medium, we may read the psychophysical law as follows: the perception of sensible changes dS corresponds to the increase of the sphere of diffusion of energy by equal distances dr.] Literaturbericht. **A. Vierkandt.** 'Literaturbericht zur Kultur- und Gesellschaftslehre für das Jahr 1906.' Einzelbesprechungen. Referate.

Kant-Studien. Band xiii., Heft 1 und 2. **Adolf Trendelenburg.** 'Zur Geschichte des Wortes Person.' [A paper written in 1870 by the late Adolf Trendelenburg, and here published for the first time. The history and development of the term 'person' is traced from the Greeks to Kant.] **Otto Baensch.** 'Über Historische Kausalität.' [A slight and not very illuminating analysis.] **Bruno Bauch.** 'Kant in neuer Ultramontan- und Liberal- Katholischer Beleuchtung.' [A criticism of an article, 'Kant, der Philosophe des Protestantismus,' in the Roman Catholic *Jahrbuch für Philosophie*.] **Eduard Sprenger.** 'W. v.

Humboldt und Kant.' [A most excellent account of the profound influence which Kant exercised upon Humboldt and of Humboldt's own personal development of the Critical principles.] Recensionen, etc.

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE. Neue Folge. Band xiv. Heft 1, 27 Februar, 1908. **Ludwig Stein.** 'Der Pragmatismus. Ein neuer Name für alte Denkmethoden.' [A preliminary article giving an account of the widespread nature of the movement, and paying a high tribute to the ability of Prof. James and to the skill and good humour with which the controversy is conducted. In mentioning reviews of Prof. James's *Pragmatism* MIND is only credited with Mr. McTaggart's notice, Mr. Schiller's being overlooked.] **Max Frischeisen-Köhler.** 'Naturwissenschaft und Wirklichkeitserkenntnis.' [Energetic method not justified in refusing to go behind visible order and division of energies. Scientific analysis only an extension of prescientific knowledge, and ought to yield, just as much, knowledge of reality.] **Martin Meyer.** 'Religion und Lebensgenuss. Ein Versuch religiöser Weltauffassung.' [Religion and pleasure coincide, since the first is the cause of progress on which pleasure attends.] **Friedrich Sommer.** 'Grundzüge einer Sozialaristokratie.' [How, without regard to birth or place, to create conditions which should ensure the highest possible development of psychical and physical qualities.] **Theodor Lessing.** 'Studien zur Wertaxiomatik.' [A long and detailed article giving a scheme for the proper consideration of values under: i. Pure formal doctrine of value; ii. Phenomenology of value; iii. Psychology of value, and iv. Actual doctrine of value; and offering an attempt towards a scientific analysis of the concept.] **Paul Schwartzkopf.** 'Die Räumlichkeit als objektiver Empfindungsverband.' [Spatiality in second and third dimensions thought into the sensations of sight: it is "anschauliche Gegenständlichkeit".] Jahresbericht über die Literatur zur Metaphysik. **David Koigen.** [Fortsetzung] Philosophie und Metaphysik. Naturphilosophie und Metaphysik. Die neuesten Erscheinungen, etc.

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOZIOLOGIE. Jahrgang xxxi., Heft iv., December, 1907. **Georg Wernick.** 'Der Wirklichkeitsgedanke'—6 Artikle. [Schluss.] **Otto Meyerhof.** 'Der Streit um die psychologische Vernunftkritik. Die Fries'sche Schule und ihre Gegner.' [Criticism of Ernst Cassirer. His misconceptions vitiate his views regarding the school of Fries.] **Ernst Cassirer.** 'Zur Frage nach der Methode der Erkenntniskritik. Eine Entgegnung.' [Replies to the preceding article, discussing the "inner experience" of Nelson and Fries; the relation of Fries and Kant, etc. Enforces his contention that Nelson has really lapsed upon the doctrine of "Common Sense".] **Paul Barth.** 'Die Soziologie Albert Schäffles.' [Society not a system of bodies, but of conative unities, thus a conational, or better a spiritual organism. Schaffle has not clearly perceived the distinction between society and an animal organism. The fundamental error of his sociology the place it gives to material goods. Sociology, to be manageable, must restrict itself to the human will.] Besprechungen. Bibliographie, etc.

PHILOSOPHISCHES JAHRBUCH. Band xix., Heft 3. **F. Klunke.** 'Der Instinkt.' [The first article of a series. Three characteristics of instinct are: the perfection and certitude of its working; its uniformity and immutability; and the fact that its activity is shared by the whole

species. We must lay down three rules in this investigation: first, to judge (as we must) of brute psychical life by the phenomena of our own conscious states; second, to adopt the simplest possible explanation; third, to decide only after complete observation of the phenomena. There are five theories as to instinct: (*a*) the reflex or mechanical theory; (*b*) the hallucination or somnambulism theory; (*c*) the theory of intelligence in brutes; (*d*) the theory of innate representations (Vorstellungen); (*e*) the theory of an 'estimative faculty,' as given by Aquinas.] **J. Becker.** 'Der Satz des hl. Anselm: Credo ut intellegam.' [The writer concludes that this motto, properly understood, is not the absolute subordination of reason to faith, but merely the basis of all intelligent theological speculation. It has always been understood thus by the best Catholic thinkers. For Anselm and the Scholastics reason and faith were not hostile brothers; faith is the highest form of intelligence, and a participation of God's infinite intelligence.] **J. Pohle.** 'Zweckmässigkeit und Unzweckmässigkeit.' [This is rather a series of aphorisms than an article, and very difficult to analyse. The writer points out many things which men of science formerly considered as existing to no purpose the utility of which has now been discovered. But at all events there are things in nature which have a purpose; and therefore, if there is design, there is a designer—God.] **P. Minges.** 'Sittlichkeit eines Aktes nach Duns Scotus.' [This paper is theological, dealing with the question whether Scot admitted that murder and adultery would be moral actions, if God willed them to be so. It is shown that Scot's meaning has been misunderstood; that he only meant to deny that the merely moral virtues were sufficient, without the intention of pleasing God, not to say that an act becomes good simply because God commands it.]

Rivista Filosofica. Anno ix., vol. x., Fasc. iv., August-September-October, 1907. **B. Varisco.** 'Che cosa consti.' [An adverse criticism on the positivist side of an argument in Ormond's *Concepts of Philosophy*, to the effect that consciousness is not only real itself but also supplies the standard of reality. The critic argues that a reality independent of ourselves need not necessarily be conscious.] **S. Tedeschi.** 'Valore e abitudine.' [The representation of types in imitative art produces more æsthetic enjoyment than the representation of anomalies because their apperception is attended with less difficulty.] **G. Salvadori.** 'Fede e Ragione.' ['Reason itself leads us to faith; and while it can and must exclude those religious beliefs which by their origin and content are in evident contradiction with the laws established by positive science and the critical methods followed by it, and which therefore offer no guarantee for their correspondence with objective realities—at the same time the fact that the field of those realities is inexhaustible inevitably leads us to affirm that faith is justified, or rather necessary, in so far as it does not contradict those laws, and in so far as it satisfies the deepest requirements and the highest aspirations of the human mind.'] **L. Miranda.** 'La posizione logica del rapporto giuridico.' [A plea for the revival of Hegel's Philosophy of Law as against the modern reliance on penal sanctions.] 'L'Anticlericalismo.' [An unsigned article, ably analysing the different forms taken by the anti-clerical movement in Italy. The Modernist position is regarded as untenable, and the inquiry seems to result in the recommendation of a liberal Christianity divorced from Rome.] Rassegna Bibliografica, etc. Anno ix., vol. x., Fasc. v., November-December, 1907. **E. Juvalta.** 'Il metodo dell' Economia Pura nell' Etica.' [As political economy assumes an 'economic man,' so in default of an absolute end on which all can

agree the best method of ethics is to provide for the establishment of a social state in which every one can equally pursue the end that to him seems best. And in order that all may pursue their own ends a general rule of justice must be rocognised.] **G. Rossi.** 'Vico ne' tempi di Vico.' [Brings to light some curious metaphysical speculations of Vico, of which one is that motion cannot be transferred from body to body.] **E. Morrelli.** 'Vita morale e vita sociale.' [After analysing the sociocratic theories of some modern Positivists the writer endeavours to correct and supplement them by examples of moral progress due to individual revolt and initiative. To be continued.] **E. di Carlo.** 'La Filosofia del Dirito ridotta alla Filosofia dell' Economia.' [An adverse criticism of Benedetto Croce's reduction of jurisprudence to a branch of political economy.] **A. Faggi.** 'Un Poeta Filosofo (Sully Prudhomme).' [Chiefly a discussion of the possibilities of physical science as a subject for poetry.] Rassegna Bibliografica, etc. Anno x., vol. xi., Fasc. i., January-February, 1908. **N. Fornelli.** 'Il nuovo individualismo religioso.' [A study of the causes by which many persons are enabled at the present day to combine a knowledge of modern science with acquiescence in or active support of outworn religious beliefs. To be continued.] **A. Faggi.** 'La coscienza negli animali.' [An able and interesting article on Loeb's theory of nervous action, particularly disputing the Californian professor's position that 'consciousness' is a purely metaphysical expression.] **A. Levi.** 'La psicologia della esperienza indifferenziata di James Ward.' [A summary, in parts not so clear as could be wished, of Dr. Ward's celebrated article on Psychology in the *Encyclopædia Britannica*.] **L. Suali.** 'Un trattato elementare di filosofia indiana.' [The first part of a translation (the first ever made), with an introduction and short explanatory notes, of the Tarkâmrita of Jagadîça, a treatise which, according to Dr. Suali, deserves to be better known than it is.] **E. Morselli.** 'Vita morale e vita sociale (contin. e fine).' [Calls for a theory of values in opposition to the doctrines of evolutionary or historical fatalism. It may be observed that this writer is mistaken in thinking that Spencer considered individuality a thing to be desired and promoted *because* evolution was tending towards its increase (p. 125). But as he attributes Comte's law of religious progress to Spencer (p. 117) his acquaintance with either philosopher must be slight.] **R. Mondolfo.** 'La dottrina della proprietà nel Montesquieu.' [Montesquieu holds that as virtue, in the sense of equality, is the constitutive principle of democratic republics, their government should prevent the accumulation of wealth in the hands of individuals by enacting sumptuary laws, and by interfering with the liberty of bequest and donation. Locke even considered that the State ought to see that none of its citizens was without the means of earning a comfortable subsistence. Both thinkers must therefore be regarded as precursors of modern socialism.] Riviste Straniere, etc. Fasc. ii., March-April, 1908. **B. Varisco.** 'La Creazione.' [A long, close and subtle criticism of Bergson's *l'Évolution créatrice*, chiefly occupied in defending the trustworthiness of our intelligence, so far as it goes. 'The mechanical agnostic philosophy which has held its ground until lately is worthless.' And Bergson was justified in attempting to put another view in its place. But he has made the mistake of discrediting intelligence, of which that philosophy is not a necessary result.] **N. Fornelli.** 'Il nuovo individualismo religioso (contin. e fine).' [Science guarantees the future of religion as an indestructible consciousness of the infinite, while the modern spirit insists on unlimited liberty of choosing the form under which that consciousness is to be realised.] **A. Levi.** 'La psicologia della esperienza indifferenziata di James Ward.' [Con-

tinues the exposition begun in the preceding number.] **A. Tilgher.** 'Bramanesimo, Buddismo e Cristianesimo.' [Brahmanism affirms Atman as the hidden reality and essential identity of things. Buddhism begins by denying Atman, thus reducing the world to a phenomenal flux, and ends with Nirvana, which is the negation of the flux. To be continued.] **P. F. Nicoli.** 'Psicologia e Linguistica.' Rassegna Bibliografica, etc.

IX.—NOTES.

'IF' AND 'IMPLY'.

With the Editor's kind permission I should like to say a few words in answer to Mr. Russell's and Prof. Mackenzie's critical notes in the April number of Mind.

If we look into the matter closely, it will, I think, be found that in mathematical reasoning the simple disjunctive $A' + B$ is always understood to really mean $(A' + B)^\epsilon$, which asserts that "it is *certain* (true in all cases) that either A is false or B true". This being understood, I admit that in *mathematics* (the theory of probability excepted) the disjunctive may be considered equivalent to the conditional or implication, so that the validity of Mr. Russell's valuable work on the *Principles of Mathematics* is in no way affected by our discussion. But in the wider field of general logic the assumption of equivalence is unsafe. Suppose, for example, we find it predicted in some astrological almanac that "This year a great *war* will take place in Europe," and also that "This year a disastrous *earthquake* will take place in Europe". Each of these assertions is a *proposition* both in Mr. Russell's sense of the word and in mine; and as neither of them can be called *certain* or *impossible* I regard them both as *variable*. Let W denote the first proposition and E the second. It is surely an awkward assumption (or convention) that leads here to the conclusion that "either W implies E or else E implies W". *War* in Europe does not necessarily imply a disastrous *earthquake* the same year in Europe; nor does a disastrous *earthquake* in Europe necessarily imply a great *war* the same year in Europe.

Mr. Russell, if I understand him aright, does not consider a propositional form of words, such as "He is a doctor," a real proposition till it is actually employed to give information. I should call it a proposition whether so employed or not. I see no reason why an instrument should not have the same name when lying idle as when employed for a purpose. But this mere question of name does not, so far as I can see, affect the real question at issue. The real cause of the misunderstanding is the fact that with Mr. Russell the proposition "A implies B" means $(AB')^\epsilon$, whereas with me it means $(AB')^\eta$. The symbol $(AB')^\epsilon$ asserts that AB' is *false*; the symbol $(AB')^\eta$ asserts that AB' is *impossible*. Our hypothetical predictions of the astrological almanac may, and probably will, turn out *false*; but as they contradict no certain or admitted *data*—no law of nature or of linguistic consistency—they can hardly be called *impossible*.

Prof. Mackenzie's reasoning may be symbolically illustrated as follows: Putting D for "He is a *doctor*," and R for "His hair is *red*," his four "essential steps" are:—

(1) $(D + D')(R + R')$, which $= \epsilon\epsilon = \epsilon$,
(2) $(D + D') + (R + R')$, which $= \epsilon + \epsilon = \epsilon$,
(3) $(D + R') + (D' + R)$, which $= (D + D') + (R' + R) = \epsilon + \epsilon = \epsilon$,
(4) $(R : D) + (D : R)$, which $= (RD')^\eta + (DR')^\eta = \theta^\eta + \theta^\eta = \eta + \eta = \eta$.

We might also write (4) thus :—

$(R : D) + (D : R)$, which $= (R' + D)^\epsilon + (D' + R)^\epsilon = \theta^\epsilon + \theta^\epsilon = \eta + \eta = \eta$.

The first three steps being certainties, each of them implies the other two, but none of them implies the fourth, as the fourth is an impossibility. Prof. Mackenzie says that "it may be doubted whether the transition from (2) to (3) is legitimate". But his doubt arises, I believe, from his thinking of (3) as meaning

$$(D + R')^\epsilon + (D' + R)^\epsilon,$$

which, as already shown, is an impossibility. Thus regarded, (2) would *not* imply (3), as a certainty cannot imply an impossibility. The statement $D + R'$, since (like its denial RD') it may be true or false, is a variable (θ), and therefore cannot be a certainty (ϵ). Hence, $(D + R')^\epsilon$ is a self-contradiction (η). Similarly, $(D' + R)^\epsilon$ is a self-contradiction.

Prof. Mackenzie says that our discussion on these points "leads us to see that the implications of a double disjunctive have not yet been sufficiently brought out by logicians". To this I would add that it is scarcely possible to treat the subject adequately without the aid of symbolic logic, and that no system of symbolic logic can do this effectively unless it takes symbolic account of the distinctions between certainties (ϵ), impossibilities (η), and variables (θ). Consider the standard syllogism *Barbara*. Let A denote its premisses and B its conclusion. It is usual to consider the syllogism as expressible by A $\therefore$ B ("A *therefore* B"). In this *therefore*-form the syllogism is not necessarily valid, for thus stated, *it asserts the truth of* A, *and is therefore false when* A *is false*. The proper symbolic form is A : B ("*If* A *then* B"). In this form it is always true whether A be true or false, for in this implicational form it only asserts $(AB')^\eta$, that "it is never the case that the premisses are true and the conclusion false". Observe again that A : B is equivalent to B′ : A′, but that A $\therefore$ B is *not* equivalent to B′ $\therefore$ A′. For A $\therefore$ B *affirms* both A and B, while B′ $\therefore$ A′ *denies* both A and B. In the *therefore*-form (A $\therefore$ B) the syllogism is open to the attacks made upon it by Mill, Bradley and others. In the "*If*" or *implicational* form (A : B) its validity is unassailable.

I am not one of those who would make a clean sweep of the traditional logic and all connected with it. On the contrary, I consider its subject matter, and especially its syllogistic problems, as exceedingly valuable in a first course of symbolic logic. But, as I have amply shown in my '*Symbolic Logic and its Applications*,' the whole subject of formal logic needs recasting.

As a simple syllogistic problem solved symbolically, take the following :—

Given the premiss that all the boys in a certain school who learn *Latin* also learn *French*, what is the weakest premiss that must be joined to this so that the combination may imply that some who learn *French* do not learn *Greek*?

Speaking of a boy taken at random, let L, F, G respectively affirm that "he learns *Latin*," that "he learns *French*," that "he learns *Greek*". Let W denote the weakest premiss required. The syllogism will then be

$$(L : F)\ W\ :\ (F : G)'.$$

Transposing and changing signs, so as to get rid of the non-implicational $(F : G)'$, we get

$$(L : F)\ (F : G) : W'.$$

But (by *Barbara*, in its proper implicational form) we have

$$(L : F)\ (F : G) : (L : G).$$

Equating consequents, we get $W' = (L : G)$ and $W = (L : G)'$. The required premiss is therefore $(L : G)'$, which asserts that L does not

imply G, or (in other words) that "Some who learn *Latin* do not learn *Greek*". Supplying this missing premiss, we get a syllogism of the form *Bokardo*.

Observe that this method of transposition, by which all valid syllogisms can be reduced to the form (A : B) (B : C) : (A : C), would be logically inadmissible if (following the usual erroneous custom) we employ the sign ∴ ("therefore") instead of the proper sign : ("implies") between the premisses and the conclusion. For though the conditional AW : C′ is equivalent to the conditional AC : W′, as each means (AWC)′, the categorical AW ∴ C′ (which affirms W and denies C) cannot be equivalent to the categorical AC ∴ W′ (which affirms C and denies W).

HUGH MACCOLL.

THE MEANING OF THE WORD 'TRUTH'.[1]

My account of truth is realistic, and follows the epistemological dualism of common sense. Suppose I say to you, "The thing exists"—is that true or not? How can you tell? Not till my statement has developed its meaning farther is it determined as being true, false, or irrelevant to reality altogether. But if now you ask "what thing?" and I reply "a desk"; if you ask "where?" and I point to a place; if you ask "does it exist materially, or only in imagination?" and I say "materially"; if moreover I say "I mean that desk," and then grasp and shake a desk which you see just as I have described it, you are willing to call my statement true. But you and I are commutable here; we can exchange places and, as you go bail for my desk, so I can go bail for yours.

This notion of a reality independent of either of us, taken from ordinary social experience, lies at the base of the pragmatist definition of truth. With some such reality any statement, in order to be counted true, must agree. Pragmatism defines 'agreeing' to mean certain ways of 'working,' be they actual or potential. Thus, for my statement 'the thing exists' to be true of a determinate reality, it must be able to lead me to shake your desk, to explain myself by words that suggest that desk to your mind, to make a drawing that is like the desk you see, etc. Only in such ways as this is there sense in saying it agrees with *that* reality, only thus does it gain for me the satisfaction of hearing you corroborate me. Reference then to something determinate, and some sort of adaptation to it worthy of the name of agreement, are thus constituent elements in the definition of any statement as 'true'.

You cannot get at either the reference or the adaptation without using the notion of the workings. *That* the thing is, *what* it is, and *which* it is (of all the possible things with that what) are points determinable only by the pragmatic method. The 'which' means a possibility of pointing, or of otherwise singling out the special object; the 'what' means choice on our part of an essential aspect to conceive it by (and this is always relative to what Dewey calls our own 'situation'); and the 'that' means our assumption of the attitude of belief, the reality-recognising attitude. Surely for understanding what the word true means as applied to a statement, the mention of such workings is indispensable. Surely if we leave them out the subject and the object of the cognitive relation float—in the same universe, 'tis true—but vaguely and ignorantly and without mutual contact or mediation.

[1] Remarks at the meeting of the American Philosophical Association, Cornell University, December, 1907.

Our critics nevertheless call the workings inessential. No functional possibilities 'make' our beliefs true, they say; they are true inherently, true positively, born "true" as the Count of Chambord was born, "Henri-Cinq." Pragmatism insists, on the contrary, that statements and beliefs are thus inertly and statically true only by courtesy: they practically pass for true; but you *cannot define what you mean* by calling them true without referring to their functional possibilities. These give its whole *logical content* to that relation to reality on a belief's part to which the name 'truth' is applied, a relation which otherwise remains one of mere coexistence or bare witness.

The foregoing statements reproduce the essential content of the lecture on Truth in my book *Pragmatism*. Schiller's doctrine of 'humanism,' Dewey's *Studies in Logical Theory* and my own 'radical empiricism,' all involve this general notion of truth as 'working,' either actual or conceivable. But they envelop it as only one detail in the midst of much wider theories that aim eventually at determining the notion of what 'Reality' at large is in its ultimate nature and constitution.

WILLIAM JAMES.

MIND ASSOCIATION.

The following gentlemen have joined the MIND Association since the printing of the January number:—

BOWMAN (A. A.), 26 Sutherland Street, Hillhead, Glasgow.
MACKINTOSH (Rev. Prof. H. R.), 81 Colinton Road, Edinburgh.
SUBRAHMANYAM (Prof. A.), Rajahmundry College, Madras, India.